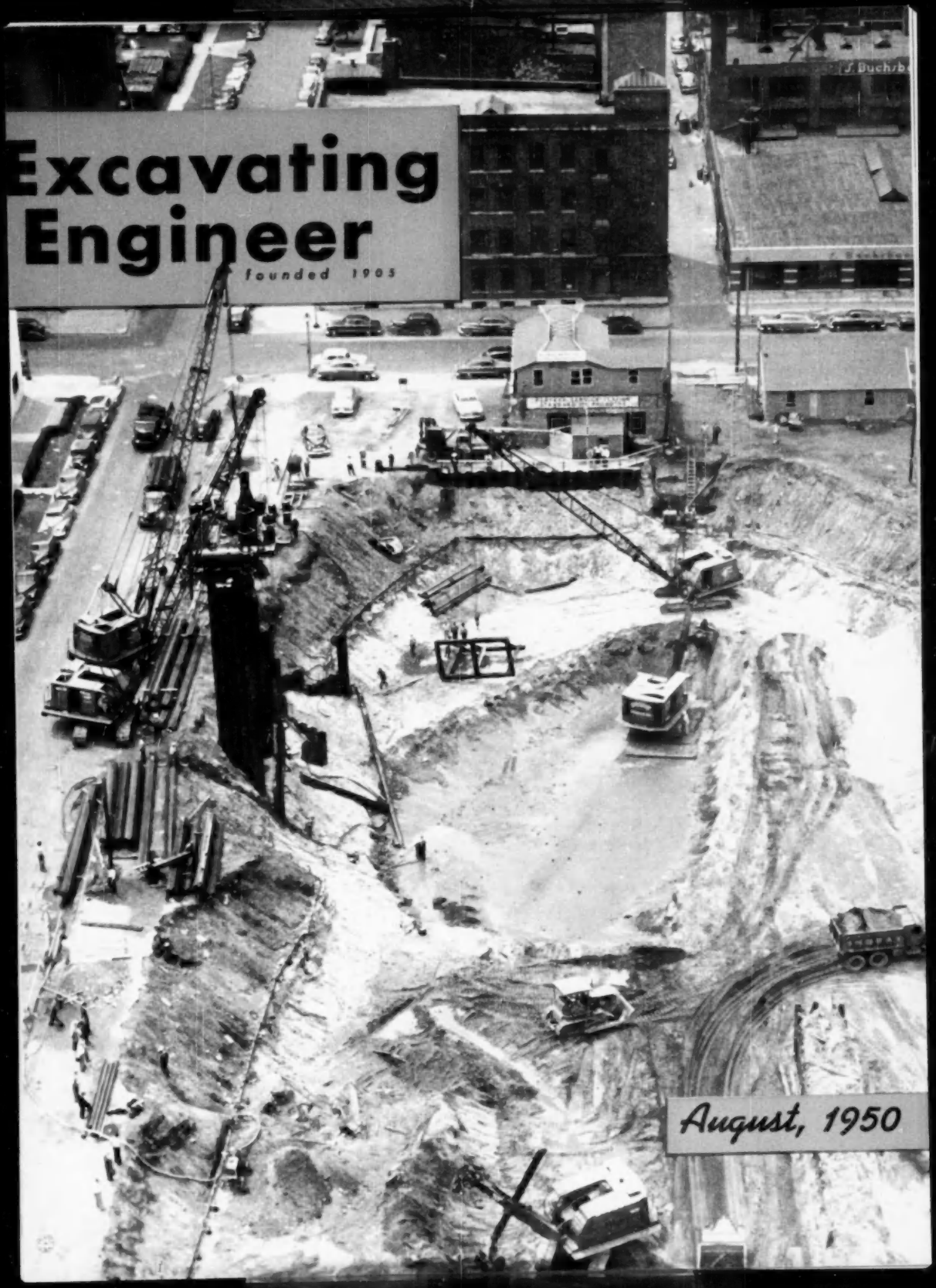
Excavating Engineer

founded 1905



August, 1950

BONUS YARDAGE EVERY SHIFT

DIGGING overburden that averages 22 feet in depth, and mining a 10-foot bed of Florida phosphate rock, this Bucyrus-Erie 650-B walking dragline is on the job 24 hours a day, seven days a week. Its ability to keep working month after month, through fair weather or foul, has been reflected in the "bonus yardages" that set outstanding production records.

Big dependable yardages are an old story to owners of Bucyrus-Erie stripping shovels and draglines. Owners know that fast, smooth-operating cycles combined with on-the-job reliability mean extra output every shift . . . that sound, *years ahead* design and durable construction mean dependability that takes years of hard service in its stride.

BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN

Cost conscious?

Here's the champ cost-cutter!

THIS IS IT—Goodyear's SURE-GRIP tire—the tire that's the overwhelming favorite of economy-minded construction men because it cuts over-all hauling costs. SURE-GRIP is tops for drive-wheel traction on graders and pans because it was specifically designed to deliver maximum performance on these specific jobs.

Goodyear's got the winning team of special-purpose tires

HARD ROCK LUG
Super-tough champ for all types of rock work

ALL-WEATHER
Finest for flotation, rolling big loads faster

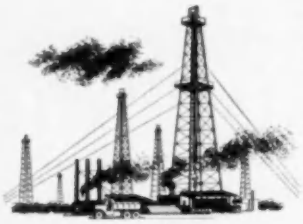
Here are two more great tires for construction work, each the outstanding favorite in its class because each is specially engineered to help you move more yardage faster and cheaper.

Sure-Grip, All-Weather, T.M.s, Trademarks of The B.F. Goodrich Company, Akron, Ohio

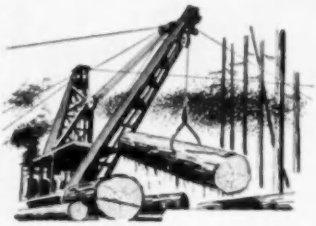
GOODYEAR

MORE TONS ARE HAULED ON GOODYEAR TIRES THAN ON ANY OTHER KIND

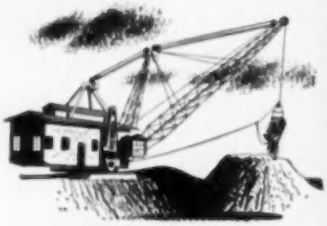
For better service use the right rope



For rotary drilling,
*PRE*formed, Internally Lubricated wire line designed to wind smoothly on drums and to withstand abrasion from running through blocks.

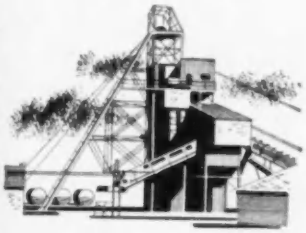


For logging operations,
tough flexible ropes for tractor arch lines, chokers, skidders and loading.

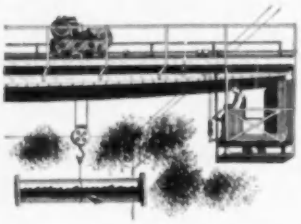


For shovels and draglines,
ropes for different sizes and types of equipment designed to give best service for your particular needs.

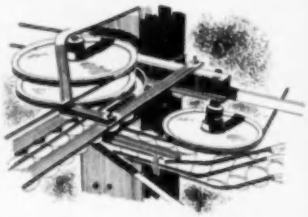
The right rope for each job is available from



For shaft mining,
shallow or deep, internally lubricated ropes to meet all load and speed requirements.



For cranes and hoists,
small or large, *PRE*formed Internally Lubricated wire ropes of the correct size and flexibility for each use.



For can conveyors,
there are bright carbon steel, stainless steel and monel metal wire ropes to meet various service conditions.

A thousand and one MACWHYTE *Internally Lubricated* WIRE ROPES

It pays to choose the right rope for your equipment

Besides the ropes listed above, Macwhyte makes many more such as cable tool drilling lines, elevator cables, incline or haulage ropes, scraper ropes, aircraft control cable assemblies, ropes for ship rigging and guying work, as well as hundreds of sizes and types of single-part, round-braided or flat-braided slings for material handling.

To get the best service, keep down maintenance costs, and *save wire rope dollars*, call your Macwhyte distributor or write direct to Macwhyte Company for recommendations. Catalog on request.

MACWHYTE WIRE ROPE

MACWHYTE COMPANY 2903 Fourteenth Avenue, Kenosha, Wisconsin Manufacturers of Internally Lubricated PREformed Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies, Monel Metal and Stainless Steel Wire Rope. Our distributors and mill depots carry stocks for immediate delivery. Mill Depots: New York • Pittsburgh • Chicago Minneapolis • Fort Worth • Portland • Seattle • San Francisco • Los Angeles

Excavating Engineer

founded 1905

Advertisers IN THIS ISSUE

American Brake Shoe Co., American Manganese Steel Div. 4
American Steel Dredge Co., Inc. 62

Bucyrus-Erie Company 2nd Cover, 13, 36-37, 56, 61

Caterpillar Tractor Company 14-15
Colorado Fuel & Iron Corp., The Wickwire Spencer Steel Div. ..... Insert opp. 16

Detroit Diesel Engine Division, General Motors Corp. 9
Drake-Williams Mount 50

Erie Steel Construction Co. 63
Euclid Road Machinery Co., The 53

For Sale (Classified) 60

General Electric Company 39
General Motors Corp., Detroit Diesel Engine Division 9
Goodyear Tire & Rubber Co., The 1

Hammermills, Inc. 58
Harnischfeger Corporation 8
Hayward Company, The 58
Hercules Powder Co. ..... 4th Cover
Hough Company, The Frank G. ..... 3rd Cover

International Harvester Co. 32-33

Jaeger Machine Co. 62
Jahn Company, C. R. 47
Johnson Company, The C. S. 40-41

Koehring Company 40-41

LaCrosse Trailer Corp. 51
LeTourneau, Inc. R. G. 10-11

Macwhyte Company 2

Northwest Engineering Co. 5

Owen Bucket Company, The 45

Pressed Steel Car Co., Inc. John Trailer Div. 47

Roebling's Sons Co., John A. 12
Rogers Brothers Corporation 49

Salem Tool Company 57
Sauerman Brothers, Inc. 54

Union Wire Rope Corporation 55
U. S. Savings Bonds 59
United States Steel 6-7

Wellman Engineering Co., The 46
Wickwire Spencer Steel Div., The Colorado Fuel & Iron Corp. Insert opp. 16

CONTENTS

Volume XLIV No. 8 **August, 1950**

On Our Cover

Shovels dig to 56 feet below street level for:

Chicago's Biggest Basement 17

Speedway Wrecking Co. handles in record time 155,000 yd. excavation in the heart of Chicago for O'Neil and Kenny, joint venture contractors, for block-square $13-million Veterans Administration research hospital.

Cultivation is a Construction Job — by John L. Parker 20

Vernon E. Shipp, Phoenix tillage contractor, has built a profitable earthmoving and leveling business on the theory that preparation of agricultural land for irrigation is a construction job requiring the services of a specialist.

Something New in Metal Mining — by E. B. Spahman 24

. . . is the $3,000,000 "push button" setup of Round Mountain Dredging Corp. in south central Nevada. Electric shovel with 7 yd. dipper works against 100 ft. dragline scarified face to supply 17,000 tons of disintegrated porphyry gold ore per day to an ultra-modern mill.

New Bridges for Main Street — by Robert J. Green 28

J. H. Ryan, Albuquerque, solves unexpected pile-driving and borrow problems on his $425,000 U. S. 66 bridge and overpass job at the Rio Puerco River in northwestern New Mexico.

"Highball" Clearing at Hungry Horse 34

Wixson and Trisdale utilize age-old leverage idea in a brand new way to clear 15,000 acres of Montana timber land at a $2,000,000 saving.

Care of Wire Rope 38

. . . is the subject of this month's down-to-earth safety talk by "Foreman Flanagan." Maintaining wire rope is pretty important business to him. He points out that wire rope may lose 50% of its service life and safeness due to common abuses.

Excavating Engineer Laffs 16

Equipment You Ought to Know About 42

News from the Field 48

Dredging the Duwamish—It's 541,000 Cu. Yd. Job 48
Reservoirs Promise Long Life Despite Sedimentation 48
Design's Dozer Blade 49
Auger Drilling Iron Ore 50

Not in the Contract 52

Notes from the Manufacturers 54

New Trade Literature 56

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the fast, low-cost way to get worn teeth back in service!

1. Worn tooth . . . 2. Plus AMSCO Tooth Repointer . . . 3. Equals like-new tooth—ready for service!

AMSCO® tooth repointers

AMSCO Repointer Bars

A teeth partially rebuilt with AMSCO Repointer Bars to show sectional view of welding method. These Repointer, or Wedge Bars, are also made in many shapes and sizes. Apply AMSCO Economy Hardface to the rebuilt tooth —*for as much as 3 times longer service!*

● Here's a typical example of a badly worn dipper tooth completely restored to service . . . simply by welding on the AMSCO Cast-To-Size Tooth Repointer. The result is like-new service life and efficiency, plus a long-wearing tooth of Manganese Steel—the steel that actually work-hardens in service. Cost? *Far less than replacement!*

Wherever equipment has teeth that wear, more and more owners are using money-saving AMSCO Tooth Repointers . . . available in a wide variety of styles and sizes.

Get all the facts! Write today for Bulletin W-10-A —showing complete instructions for use.

put LIFE into service with

AMSCO®
WELDING PRODUCTS

AMERICAN **Brake Shoe** COMPANY

AMERICAN MANGANESE STEEL DIVISION
373 EAST 14th STREET • CHICAGO HEIGHTS, ILL.

THIS SHOVEL HAS STOOD *the Rock Test!*

Here's a job that would test the metal of any equipment. It's the kind of a place where smoothness of dipper control, ease of operation, accuracy in spotting and crawler maneuverability mean the difference between daily loss and irritation — or profit. Only a real Rock Shovel can handle a job like this! The machine is owned by Frazier-Davis Construction Co. of St. Louis, Mo., and it is working on part of the new water line for New York City — and by the way, Frazier-Davis have bought their 21st Northwest.

CAN YOURS?

INDEPENDENT CROWD *plus* AUTOMATIC CROWD
FOR GREATER DIGGING POWER
The DUAL CROWD

NORTHWEST ENGINEERING CO.
1506 Field Bldg., 135 South LaSalle St.
Chicago 3, Illinois

only the best for the heart of the job
MAKE YOUR KEY MACHINE A REAL ROCK SHOVEL
PROFIT

NORTHWEST

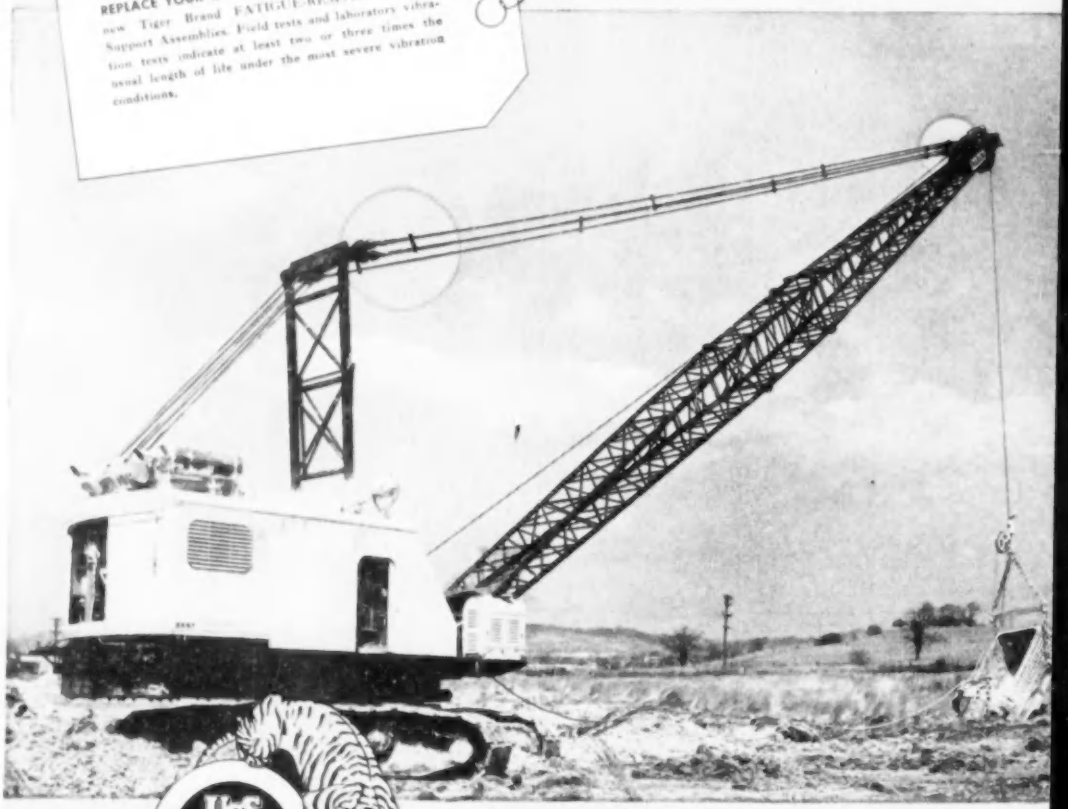
CRAWLER and TRUCK MOUNTED SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

2 to 3 times longer

with these new Fatigue-Resistant

An exclusive development of
AMERICAN STEEL & WIRE COMPANY

REPLACE YOUR OLD BOOM SUPPORTS with these new Tiger Brand FATIGUE-RESISTANT Boom Support Assemblies. Field tests and laboratory vibration tests indicate at least two or three times the usual length of life under the most severe vibration conditions.

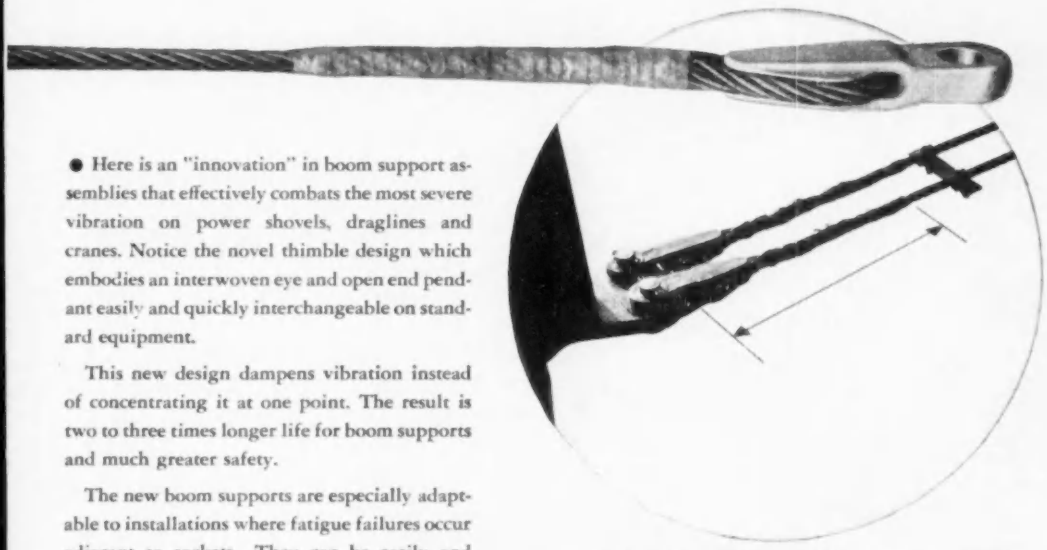


USS AMERICAN TIGER BRAND WIRE ROPE UNITED STATES STEEL

NEW TIGER BRAND FATIGUE-RESISTANT BOOM SUPPORT ASSEMBLIES on a 5 cu. yd. dragline near Pittsburgh, Pa.

life for boom supports

Tiger Brand Cable Assemblies



● Here is an "innovation" in boom support assemblies that effectively combats the most severe vibration on power shovels, draglines and cranes. Notice the novel thimble design which embodies an interwoven eye and open end pendant easily and quickly interchangeable on standard equipment.

This new design dampens vibration instead of concentrating it at one point. The result is two to three times longer life for boom supports and much greater safety.

The new boom supports are especially adaptable to installations where fatigue failures occur adjacent to sockets. They can be easily and quickly adapted to your present equipment because essential dimensions such as pin diameters, distances between ears, etc., are the same as for standard open and closed sockets.

Fatigue-Resistant Boom Supports are an exclusive development of American Steel & Wire Company. Send the coupon for complete information.

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COLUMBIA STEEL COMPANY, SAN FRANCISCO
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM, SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

VIBRATION EFFECTIVELY DAMPENED HERE over a long section instead of being concentrated at one point.

American Steel & Wire Company
Rockefeller Building, Dept. E-80
Cleveland 13, Ohio

Please send me complete information on your new Tiger Brand Boom Support Assemblies.

Name.....

Title.....

Company.....

Address.....

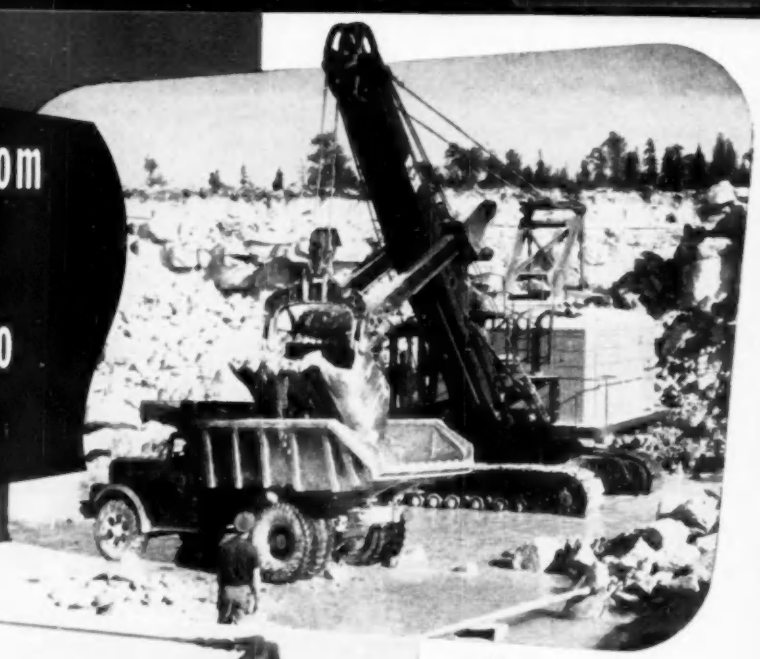
City.....State.....

AMERICAN TIGER BRAND WIRE ROPE

Excellay Preformed

UNITED STATES STEEL

For Rock Bottom Costs From Start to Finish!



START . . . FLUXING STONE
A P&H Model 1400 Diesel-Electric (4 yd.) shovel, owned by Drummond Dolomite Inc. at Drummond Island, Michigan.

FINISH . . . BLAST FURNACE SLAG
A P&H Model 1400 Diesel-Electric shovel owned by the Buffalo Slag Co., Buffalo, New York.

P&H DIESEL-ELECTRIC SHOVELS

with *MAGNETORQUE** HOIST DRIVE

Now, you can have electric shovel efficiency *anywhere* with a P&H Diesel-Electric quarry and mining shovel. It's a complete electric shovel . . . with the addition of a diesel engine to furnish power . . . entirely independent of high line service.

Years of the toughest rock digging have proved the P&H Diesel-Electric from every standpoint . . . dependable operation . . . less maintenance . . . rock bottom tonnage costs.

This simplified P&H Diesel-Electric shovel is made possible by the exclusive P&H Magnetorque Hoist Drive. Hoist generator, hoist motor, slip friction clutch and other mechanical devices are completely eliminated. Magnetorque is only one of many P&H Added Values. Ask for Bulletin X83-DE.

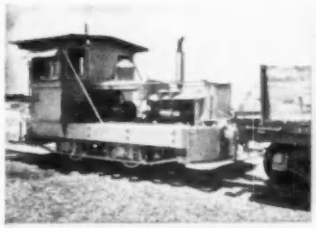
Every Third P&H Electric Shovel Sold is a Repeat Order.

P&H ELECTRIC SHOVELS
4517 West National Avenue
Milwaukee 14, Wis.

HARNISCHFEGER CORPORATION

*Trade Mark of Harnischfeger Corporation for electro-magnetic type clutch

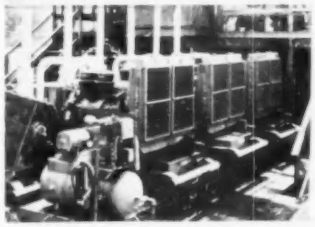
LEADING THE FIELD IN ELECTRIC SHOVEL DEVELOPMENTS • EXCAVATORS • OVERHEAD CRANES • HOISTS • ARC WELDERS AND ELECTRODES • SOIL STABILIZERS • CRAWLER AND TRUCK CRANES • DIESEL ENGINES • CANE LOADERS • PREFABRICATED HOMES



LOCOMOTIVES—Repowered with GM Diesel Torque Converter unit, this 20-ton locomotive hauls double the tonnage without ever shifting into low gear.

HOISTING—Converted from steam to GM Diesel Torque Converter power—estimated operating savings will pay repowering and overhaul cost in less than two years.

EARTH MOVING—Two 190 H. P. GM Diesel Torque Converter units give 34-ton Euclid 1-FPD rear dump a speed of 25.4 m.p.h. with full load.



DRILLING—"⅓ faster than with original engines," says owner of rig repowered with 3 GM "Twin" Diesel Torque Converter units.

LOGGING—Powered with GM Diesel Torque Converter unit, this Washington Iron Works yarder has yarded 140,000 bd. ft. per day.

WRITE FOR YOUR COPY

of 24-page illustrated catalog giving full details on design, operation and application of "The NEW General Motors Diesel Engine-Torque Converter Unit."

How to Get *MORE WORK* from your Equipment

Operators in every field report they get more work done in less time at lower cost with equipment powered by General Motors Diesel Engine-Torque Converter units.

The combination of a GM Diesel engine with an integrally built torque converter and fluid coupling provides a compact power unit which makes available maximum engine horsepower and torque regardless of the speed of the load. It delivers high torque for starting heavy loads and *automatically* shifts to fluid coupling when load requirements equal engine torque. Gear shifting is cut to a minimum—often eliminated. Smooth transmission of power through a fluid, protects both engine and driven machinery from sudden shock loads—prevents engine stalling under any load condition.

These efficient Diesel Engine-Torque converter units are available with 3-, 4-, and 6-cylinder engines, Twin 4 and Twin 6 multiple engines, rated at 64 to 294 B.H.P. See your GM Diesel distributor or write us for further information.

DETROIT DIESEL ENGINE DIVISION

SINGLE ENGINES . . . Up to 275 H.P. **DETROIT 28, MICHIGAN** MULTIPLE UNITS . . . Up to 800 H. P.

GENERAL MOTORS

GM GENERAL MOTORS DIESEL POWER

DIESEL BRAWN WITHOUT THE BULK

7 TOOLS for 28

Primemover on D Roadster-type Tournapull has 122 h.p. diesel engine . . . 5 speeds to 28 m.p.h. . . . electric controls . . . 90° turn power steer . . . power-proportioning differential . . . 18.00 x 25 low-pressure tires. Wide rim 65" Tournapull tires and 56" Carryall tires are available. These extra big tires speed loading because they provide increased flotation and reduce rolling resistance. In sand and soft going they will deliver as much as 60% load increase over ground-grip tires. Uses 4-wheel multi-disc air brakes with every auxiliary unit except Logging Arch . . . 3132 sq. in. braking surface.

1 7-YD. CARRYALL SCRAPER

D Tournapull with 7 cu. yd. (9-ton) Carryall self-loads in all good scraper materials . . . yet has ample load capacity for profitable pusher-loading on production dirtmoving. Interchangeable with all other hauled units . . . or can be used with Bulldozer or snow plow mounted on front of Tournapull.

4 V-TYPE SNOW PLOW

has 10½' clearing width . . . 4'8" high at ends of moldboard. Vertical divider plate, welded in center of V-blade opens frozen drifts . . . eliminates plowing snow back on road when widening. Adjustable runner shoe, big tires protect road surface. Clears, widens at 28 m.p.h. cruising speed . . . Carryall on rear can be loaded for extra drift-busting weight.

5 7-TON TOURNACRANE

lifts up to 29½' . . . reaches 31' . . . handles 7 tons with exceptional load maneuverability. Easy, finger-tip electric control of load hoist, and sliding boom on tilted track. Goes anywhere . . . on pavement, through sand, mud . . . handles structural work, unloads supplies . . . saves you time and money on every job. Quickly hooked up or uncoupled as needed.

LETOURNEAU EQUIPMENT

LETOURNEAU PEORIA, ILLINOIS — JOB-PROVED — **TOURNAPULLS**

MORE WORK PER HOUR WITH RUBBER-TIRED POWER

m.p.h. D TOURNAPULL

2 **BULLDOZER** on rubber-tired "D" gives you a 28 m.p.h., "drive anywhere" dozing unit for light clearing, backfilling, pusher-loading other "D's" in fleet operation. Husky 6'8¾" x 2'8½" blade has reversible cutting edge, replaceable tips . . . 3' blade lift . . . electric controlled. Operates independently of Carryall on rear. Bulldozer-Carryall combination often saves cost of an extra man and machine.

3 **9-TON TOURNAROCKER**

assures steady, year-round profits . . . keeps "D" busy earning extra savings on your own jobs . . . good pay on sub-contracts or rentals. This new rear-dump hauling unit has 10 heaped yd., 9-ton capacity . . . low 7'0" loading height . . . 14' 5" wheelbase . . . 12'2" turning radius. Simple, electric body hoist. Dumps clear over bank, tips vertical, cleans fast.

Tournapull, Carryall, Tournacrane—Trademark Reg. U.S. Pat. Off.
Tournarocker—Trademark C129

6 **10-TON LOGGING ARCH**

offers another profit opportunity for the 122 h.p. "D". Hoists, skids 10-ton log loads over rough terrain . . . big, low-pressure tires, and power-proportioning differential of primemover, provide easy-rolling flotation and constant-pull traction. Ample load clearance . . . 7' wide, 6'9" high inside arch. Can be used with Bulldozer on front . . . all electric control.

7 **10-TON TOURNAHAULER**

Big 21'3" x 8'7" flat-bed hauls heavy construction, oil field, logging, mining equipment and supplies on or off highway. Loads itself by traveling overhead monorail, with 10-ton electric hoist . . . reaches out 10'1¾" beyond end of flat-bed . . . lifts load up to 12'1". One-man operated. Quickly pays for itself . . . easily interchanged with other units.

Mail now to **R. G. LeTOURNEAU, Inc., Peoria, Ill.**

NAME
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STREET
CITY

TITLE

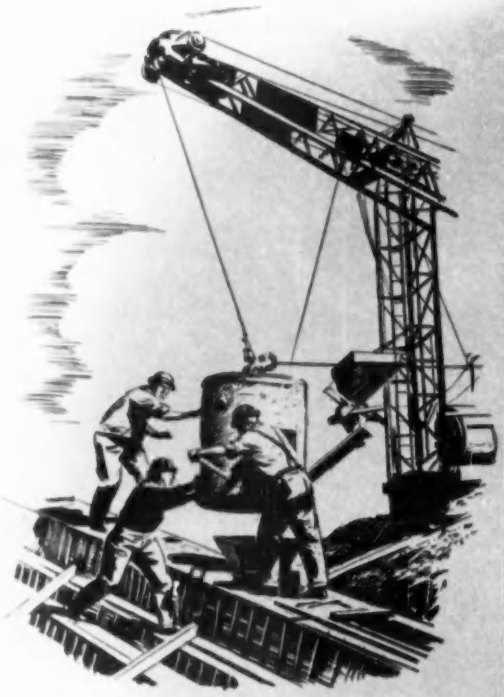
STATE

Send us specifications, prices on D Tournapull for use with:

- [ ] CARRYALL
- [ ] BULLDOZER
- [ ] TOURNAROCKER
- [ ] SNOW PLOW
- [ ] TOURNACRANE
- [ ] TOURNAHAULER
- [ ] LOGGING ARCH

Get all the facts

Today it's Roebling!



Why men who watch costs specify Roebling Preformed

THE RECORDS PROVE IT . . . that Roebling Preformed "Blue Center" Wire Rope stays on the job longer and cuts your costs. This is partly because "Blue Center" steel—developed and made only by Roebling—has unsurpassed resistance to abrasion, shock and fatigue. In large measure, too, it is because of the painstaking care, special techniques and modern precision machines that guard and maintain Roebling quality leadership.

Preformed a big help, too. Wide experience in the field proves that Roebling *Preforming* brings still more operating economics. Preformed is easier and faster to handle and install. You can cut it without seizing. It winds better . . . is not apt to set or kink . . . minimizes vibration and whipping.

Today's best buy. Roebling makes wire rope of every construction, grade and size . . . engineered for top efficiency on every type and make of rope-rigged equipment. Have your Roebling Field Man recommend the *right* rope for best, low-cost performance on each installation. John A. Roebling's Sons Company, Trenton 2, N. J.

Roebling Preformed Lang Lay "Blue Center" **Steel Wire Rope** lasts longer; brings fewer shut-downs; cuts down **replacement** time; saves wire rope dollars.

ROEBLING

A CENTURY OF CONFIDENCE

Atlanta, 910 Avon Ave. • *Boston*, 51 Sleeper St. • *Chicago*, 5525 W. Roosevelt Road • *Cincinnati*, 5243 Fredonia Ave. • *Cleveland*, 701 St. Clair Ave., N. E. • *Denver*, 1001 Jackson St. • *Houston*, 6216 Navigation Blvd. • *Los Angeles*, 216 S. Alameda St. • *New York*, 19 Rector St. • *Philadelphia*, 12 S. Twelfth St. • *Portland*, 1032 N. W. 14th Ave. • *San Francisco*, 1740 Seventeenth St. • *Seattle*, 900 First Avenue S.

Here's A Tip for Your Pit..

Boost Output with Bucyrus-Eries!

MINE owners all over the world agree that there's no better excavator for your ore-loading assignments than a Bucyrus-Erie. That's because Bucyrus-Eries combine power, speed and economy with a sturdy, simple design that means faithful service throughout years of profitable operation. Easy to operate, easy to maintain, Bucyrus-Erie excavators are built in a range of sizes to suit the requirements of any open-pit operation. Your Bucyrus-Erie distributor can give you full information on these outstanding ⅝- to 4-yard gasoline, diesel and single-motor electric excavators.

BUCYRUS ERIE

BUCYRUS-ERIE COMPANY • South Milwaukee, Wisconsin

WHERE PROFITS

"CAT" EQUIPMENT SPEAKS YOUR

TO THE earthmoving contractor profits are mighty important. And an outfit like the one shown on opposite page offers more ways of *boosting* profits than any comparable equipment under the sun. These are not imaginary or "iffy" profits. They're the kind that show up unmistakably – in lower costs per yard, in more yardage per hour, and in more lifetime hours per machine.

Take the "Caterpillar" DW10 – one of the greatest wheel tractor successes in recent years. Look at the work-capacity features and the honest-to-goodness quality "Caterpillar" has built into it. (Nothing is too trivial in making "Caterpillar" products the finest and most profitable investments of their kind.) See your "Caterpillar" dealer for further facts and figures about DW10 advantages for your job.

CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS

Profit IN STRENGTH

The DW10 is built to handle big loads. Main frame—composed of two strong box-welded members securely fastened to transmission case—is 12 inches deep at the rear, where the load is carried. The rigid structures have several times the resistance to twisting strains that channel sections of the same size afford. Great frame strength and ruggedness provide a firm foundation for the components of this powerful wheel tractor.

Profit IN QUALITY

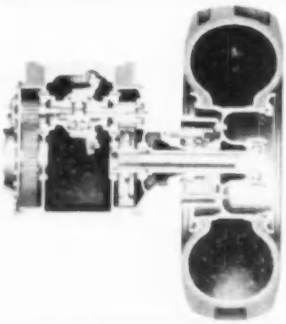
To withstand the demands of continuous hard work, the final drive assembly of the DW10 is rugged yet finely engineered. It embodies precision-built bevel gears, full floating rear axle, crown-shaved "Hi-Electro" hardened final drive gears, optional gear ratios, welded steel transmission case, cast steel final drive housing, air-operated brakes. Sound construction!

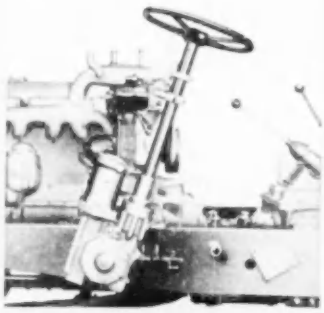
Profit IN EASE OF OPERATION

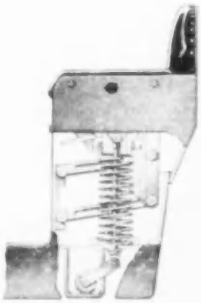
A hydraulic booster gives the DW10 passenger-car steering case and absorbs shock loads when taking rutted roads and downhill runs. Yet the steering system can be operated independently of the booster feature. A fine safety feature in the highest sense!

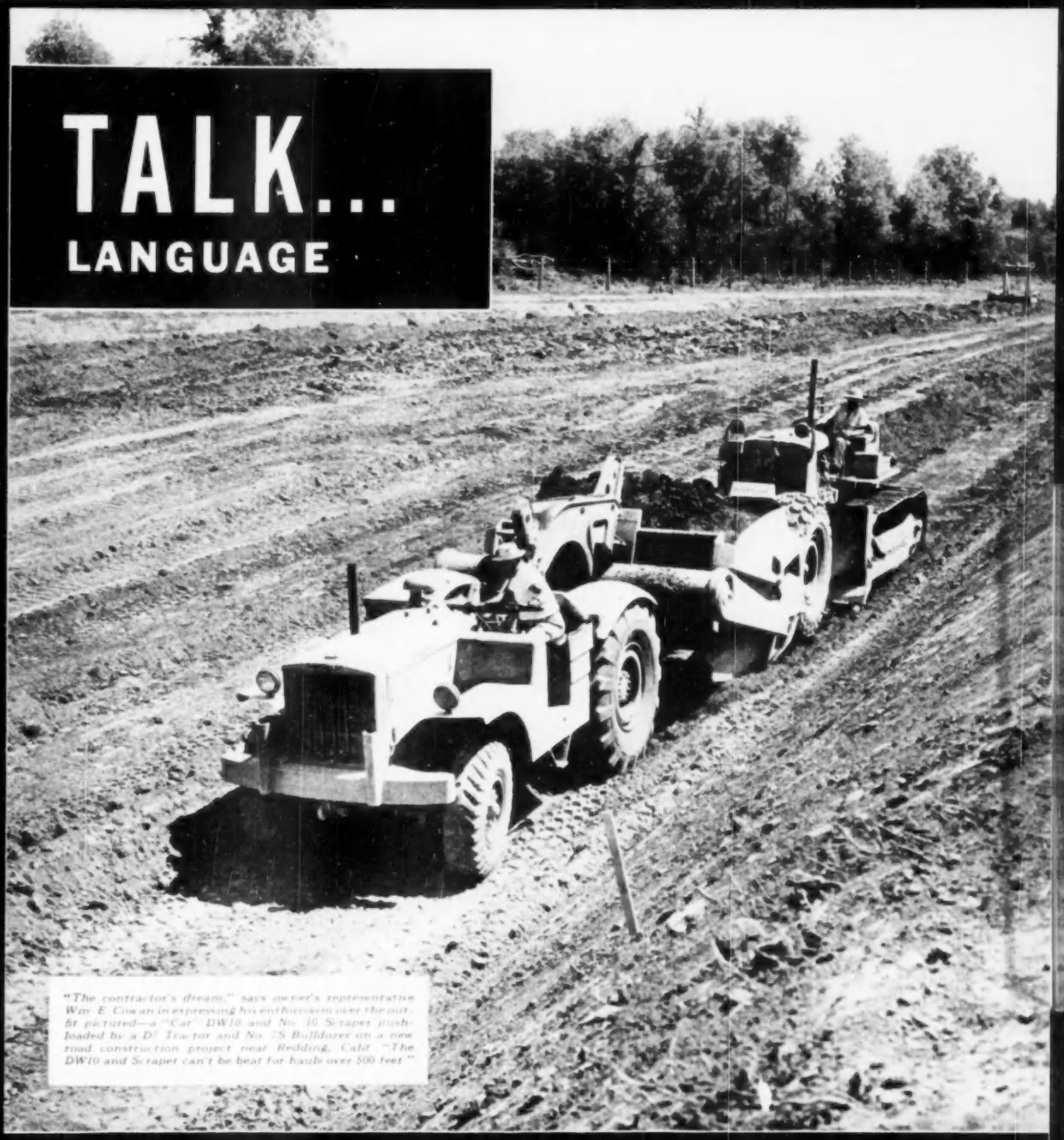
Profit IN OPERATOR COMFORT

The DW10 is built for easy, safe driving. Besides finger-tip steering, excellent visibility, handy controls, and minimum "stretch," the DW10 provides easy riding through airfoam rubber seat cushion *plus* seat springs that are adjustable to operator's weight.









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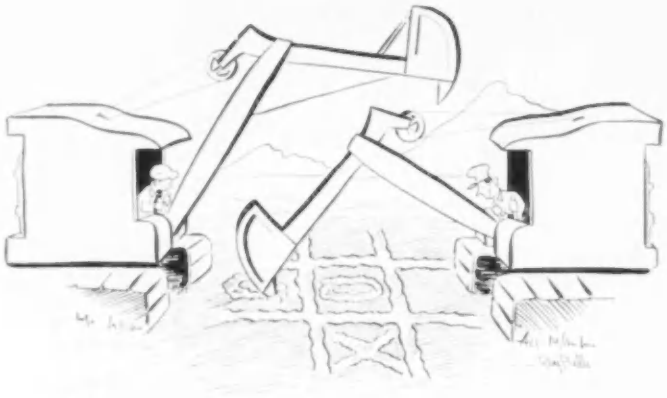
Excavating Engineer LAFFS



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Chicago's Biggest Ba

Speedway Wrecking Co. handles in record time 155,000-yd. excavation in the heart of Chicago for O'Neil and Kenny, joint venture contractors for block-square $13-million Veterans Administration research hospital.

MAY 15 to July 5 saw completion in record time of excavating for what is probably the largest basement ever dug in the city of Chicago. As the first step in construction of a $13-million Research Hospital for the Veterans Administration, approximately 155,000 cu. yd. of fill, sand and clay were removed to a depth of 56 feet within a few blocks of the city's Loop.

The $13-million construction contract for the research hospital was awarded May 12 to the combined forces of W. E. O'Neil Construction Co. and Kenny Construction Co., both of Chicago. The joint venturers expect to complete the building by February, 1952—a total of 650 days.

The building will have four wings giving it the appearance of an X to airplane viewers. It will rise 17 floors—240 feet into the Windy City skyline—and will go two subbasements below street level.

• Harry DeYoung (left), superintendent, and Jack Kolko, president of Speedway Wrecking Co., stand beside the pit their machines have dug in four weeks.

• Left: 1½ and 2-yd. shovels keep dirt moving out of the excavation at 500 yards per day clip. Hank Graefen operates LaPlant-Choate blade on Caterpillar D-7 to keep haul roads in top shape for steady stream of trucks.

sement

Excavating was subcontracted May 12 to the Speedway Wrecking Co., Chicago, for approximately $250,000 on a cu. yd. unit basis. Speedway achieved its first success in the field of concrete removal and is still best known for this type of work. The outfit has ripped out innumerable outmoded Chicago streets, had the contract for concrete removal after the '33-'34 World Fair. Speedway's next job calls for excavation of 20,000 yards of concrete in remodeling four camps at the Naval Training Station at Great Lakes, Ill. Plain dirtmoving is also a Speedway specialty — the excavation for the MacArthur lock in the Sault Ste. Marie ship canal linking Lake Su-

• Interlocking sheet steel piles are positioned prior to driving. All deep excavation is lined with the piles to help keep working area dry.

• Below: 2-yd. Bucyrus-Erie 44-B stands 45 feet below street level as it loads trucks on the next lift above. Two cranes at left handle pile hammers while another of four Bucyrus-Erie 38-B cranes operated by O'Neil and Kenny moves piles from stock at right.

• Stang wellpoint system installed by O'Neil and Kenny discharges into Chicago sewer mains. Bucyrus-Erie 38-B crane handles wooden frame used to guide sheet steel piles during driving.

• Left: J. W. Kelly (left) government inspector, R. F. Luke, Western Foundation Co., and Colonel T. F. Montgomery, construction engineer for the Veterans Administration, stand in front of foundation pile on test. Hydraulic jacks keep load at constant 100 tons on the 94-ft. deep poured pile.

• Speedway Superintendent Harry DeYoung watches loading of truck by 1½-yd. shovel. Harry's son, Ed, is operator of the shovel. Part of Furniture Mart building is visible in background.

• 1½-yd. shovel rips apart remains of old Streeterville pier uncovered in the excavation. Note suction line of wellpoint system which skirts entire excavation just above layer of sand.

• Above: From street level the haul road drops 35 feet in 200 yards to the level where 1½-yd. Bucyrus-Erie 38-B shovel loads trucks. Two-yd. Bucyrus-Erie 44-B works at lowest level, 45 feet down. Some water has collected here — final cut (for elevator pits) to 56 feet will necessitate construction of sump from which water can be pumped.

• Left: O'Neil Construction Company's Bucyrus-Erie 38-B crane with Jimmy Ward at the controls positions 45-ft. interlocking pile.

perior and Lake Huron was a Speedway job.

Speedway's president, Jack Kolko, is the authority for the statement that the present job is the largest basement ever dug in Chicago. Indeed, the excavation looks like an open pit mine in the heart of the city. Across the street to the east is the famed Furniture Mart. To the north are the towering buildings of the downtown Northwestern University campus.

Two roads lead into the "pit" from the street bordering the east side of the excavation. One of the roads is narrow—one truck wide—the other is two trucks wide. They converge in a V in the approximate center of the block-square excavation. The narrow road feeds trucks to a Caterpillar-powered 1½-yd. Bucyrus-Erie 38-B shovel. The wider road directs the dumps to a 2-yd. Buda-powered Bucyrus-Erie 44-B shovel. Trucks leaving the excavation use half of the wider access road.

Load 30 Dump Trucks

When the job was visited by *Excavating Engineer's* staff member, Speedway had 30 dump trucks assigned to dirt hauling. These varied in capacity from 8 to 16 cu. yd. They were of four kinds, about equal in number—Macks, Sterlings, Autocars, and Whites.

On the floor of the excavation, two spotters direct truck traffic. It is their responsibility to check loads for loose chunks of clay that might fall off and cause accidents in the heavy Chicago traffic. In addition to spotting trucks where the shovel can reach them with the least swing, they signal drivers when trucks are loaded, making it unnecessary for drivers to leave their cabs.

Haul roads in and out of the excavation are of necessity steep. The drop from street level to loading area is about 35 feet within 200 yards.

To keep these roads in excellent condition, a Caterpillar D7 with LaPlant-Choate blade is kept busy 12 hours a day. The machine starts work a couple of hours before the shift and keeps on going after the day's excavating is finished. It cleans up spillage and builds up, packs and grades the access roads. Some days, Speedway allots as many as 46 trucks to the basement job; consequently the wear and tear on the steep driveways is extreme.

In the first four weeks of activity, Speedway moved between 75 and 80

Continued on page 62

• Loaded Sterling climbs steep driveway on way to dump area in Belmont Harbor. Tribune Tower and other downtown landmarks visible in the rear are only a few blocks distant.

• Below: McKiernan-Terry 983 hammers swung by Bucyrus-Erie 38-B cranes work sheet piling into ground.

Cultivation is

Vernon E. Shipp, Phoenix tillage contractor, has built a profitable earth-moving and leveling business on the theory that preparation of agricultural land for irrigation is a construction job requiring the services of a specialist.

By John L. Parker

MOVING the bulk of $100,000 worth of equipment every few days sounds like uncertain business. But to Vernon E. Shipp, Phoenix, Ariz., spreading machinery all over the fertile Sa'lt River Valley is part of the job.

A contract operator doing land leveling, subsoiling, and preparing ground for planting in this fertile irrigated valley, Shipp's average job lasts four days and he often has 80 to 90 jobs ahead of him. During the rush season—three to four months in the fall and a month to six weeks in the spring—his equipment operates round the clock. That means he is moving some equipment—including seven crawler tractors, a 6-yd., 4-wheel scraper, 65-ft. landplane, discs, plows, and harrows plus three Ford 8N wheeled tractors with complete sets of working tools—just about all the time. Although moving costs alone can make or break him on many of the jobs, Shipp thrives on his constantly changing work. So efficient are his operations that few major moves amount to $25 even when the distance is 20 miles from home base.

Shipp has given careful attention to this major problem of getting machinery to the job fast and at low cost. Part of his cost cutting method is careful scheduling. Shipp keeps his jobs laid out at least a week ahead, making it possible to keep several pieces of machinery rotating in the field without bringing them back to the yard at the end of each job.

If he has a scraper job, it usually means he can use his crawler-mounted cable dozer. So the dozer and scraper are sent out together. When he is sending an operator out with a big disc plow, he checks other nearby jobs for possible discing, floating, or subsoiling work. Equipment is often switched from one crawler to another.

One-Man Rig Movers

To make these quick switches, Shipp has designed a couple of heavy equipment movers that are tops in one man operation. Each mover is built by Elbert Morris, Phoenix, of 3-in. triple strength pipe welded into an 18-ft. long reinforced frame mounted on two Ford truck hubs carrying 8.25 tires.

a Construction Job

• All hands at Shipp Shape Tillage are kept informed of the weekly job schedule by this bulletin board, here being brought up to date by Vernon E. "Skipper" Shipp.

• Most of Shipp's earthmoving jobs are on flat ground, cutting to soil conservation stakes (one at far right). Hauls are usually short, cuts and fills shallow. With his International TD-14 drawn 6-yd. Bucyrus-Erie S-68 scraper, Shipp can come right to the mark and follow up with his landplane without need for secondary leveling.

• Left: Allis-Chalmers HD-7 and Adams pull grader make a fast irrigation ditch-building team.

With it one man can load the heaviest piece of machinery in minutes.

The mover works as an overhead carrier with two log chains attached to each of three revolving pipes. Lifting power is transmitted from hand cranks operating through 2:1 ratio Ford steering gear to the overhead pipes through universal joints and "A" Ford rear ends mounted at pipe heads. With this mover, a Shipp operator can have the biggest 6-disc plow ready to move down the road at 60 mph in five minutes. He can unload it in the field in even less time.

To move his crawlers, Shipp uses three 2-ton Ford F-6 trucks equipped with homemade heavy duty trailers on Fruehauf 10-ton single axles carrying tilting beds. A crawler can be positioned on the trailer and the bed winched into position in a few minutes. A ton Ford F-3 pickup is used to trail equipment, pull the overhead carrier and service traps.

Shipp operates his three Ford wheeled tractors on small contracts under five acres and for yard work in subdivisions and trailer court work. He has gone into the yard business in self defense since losing over 4,000 acres of former contract farming operations to subdivisions. Shipp has found the Ford tractors handy as pockets in shirts. With his moving unit, an operator can take all the attachments for his Ford along in one move and do the job plus loading and unloading without help.

A major saving in fuel handling costs is effected by the use of five trap wagons mounted on 4-ton low bed farm trailers. The tanks are mounted on the trailer chassis with steel tension straps and are built of welded 16-gauge plate. Each trap carries 550 gallons of Union diesel fuel. There are small tanks for gasoline and oils, also supplied by Union Oil Co. A locker compartment in the back takes care of all special supplies, extra wrenches and grease guns.

During the year Shipp handles be-

• A Ford 8N wheeled tractor discs up an irrigation border on land planted to Bermuda grass.

• Shipp uses five of these complete servicing units mounted on low bed farm trailers. Tanks are for diesel fuel — 550 gallons each. A 3x4-ft. locker in the rear takes care of tools and grease guns. Union fuels and lubricants are used exclusively.

tween 20 and 40 thousand acres. He defines his ground working operations as bringing land up to the point of planting—has no crop planting equipment outside of a few grass seeders. His tillage work is strictly dirt moving although this may be only a matter of turning it over. For this his tractor working force includes two Allis-Chalmers HD-7's and five Internationals—three TD-14's a TD-35 and a TD-6. The crawlers are used on every type of agricultural and leveling implement including 6 bottom disc plows, hydraulic land levelers and a 6-yd. Bucyrus-Erie S-68 scraper.

With the one scraper Shipp handles from 175,000 to 200,000 cu. yd. of dirt a year. An average job runs from 5,000 to 20,000 yards. The scraper is used with an International TD-14 equipped with a Bucyrus-Erie cable dozer. Most of the scraper work is on land leveling operations bringing fields to grade for irrigation by flooding between ridges every 30 to 50 feet apart. Average haul is around 600 feet. Shipp usually limits his scraper jobs to those under 40 acres since there are several large contractors who will not take on a project this "small."

Land leveling jobs are usually to Soil Conservation grade stakes—since these surveys are free to landowners. Average fall on irrigated land is .2 ft. per 100. A 10-ft. fall per mile makes a sharp drop on some crops but is almost ideal for row crops. Shipp finds his scraper can be used to cut and fill right to the mark without using supplementary equipment to finish the job. "We are able to see exactly what we are doing both loading and dumping," Shipp says.

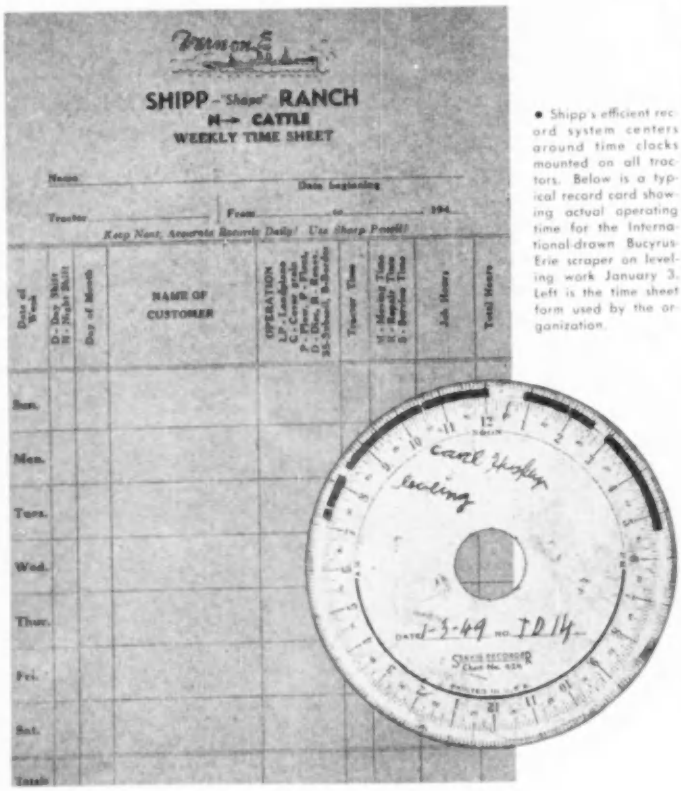
Much of the yardage on a job is in high corners of fields which must be cut down and low sides filled in. Usually a diagonal haul is used on which it is possible to load during part of the return trip. The scraper customarily moves 60 to 100 yds. per hour, depending on conditions, on an average 90-hour job.

Most Profitable Combination

Shipp considers the TD-14 dozer-scraper combination his most profitable investment since the tractor is kept busy almost constantly, either as a prime mover for the scraper, or powering the dozer. In addition to filling in old ditches, and cutting down banks, Shipp finds the dozer a profitable unit in tree removal. Citrus orchards are frequently removed completely. With the dozer the trees can be uprooted and pushed into piles for drying. After a few days, Shipp comes back with the dozer and burns them—the trees burn well if they are kept pushed in tight piles.

In addition to regular crop tillage services such as land leveling, discing, plowing and dozing, Shipp does a great deal of subsoiling work. In this comparatively recent and growing agricultural practice, ground is ripped to a depth of 16 to 30 inches using steel shanks mounted on a two-wheeled frame.

This ripping action breaks the ground up completely at subsoil depth to relieve a soil condition which develops as a result of continued irri-



• Shipp's efficient record system centers around time clocks mounted on all tractors. Below is a typical record card showing actual operating time for the International-drawn Bucyrus-Erie scraper on leveling work January 3. Left is the time sheet form used by the organization.

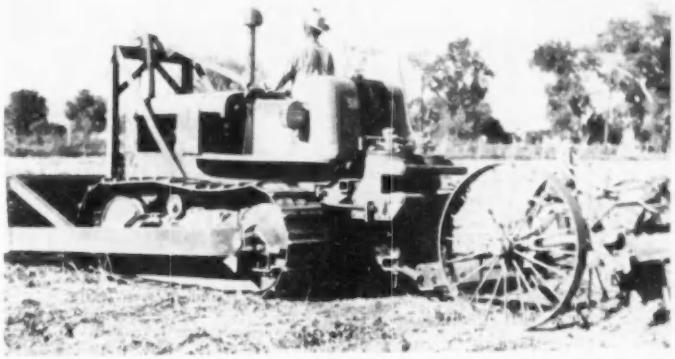
gation and tillage. Irrigation washes the fine silt of the surface soil and carries it down to varying depths where it gradually builds up as a solid waterproof barrier which chokes off the root systems of crops.

Modern agricultural thinking which approaches soil cultivation as a construction job designed to insure maximum results from machine tillage practice, has found subsoil ripping the most valuable of all cultivation practices. Subsoiling requires plenty of power on the drawbar, especially when more than one shank is ripping at depth.

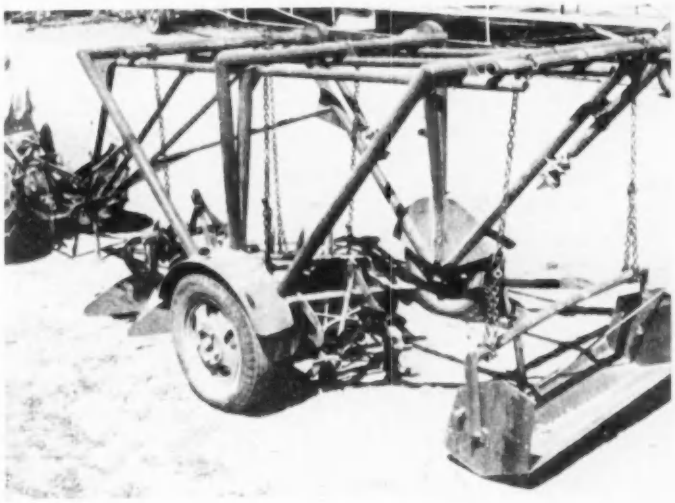
Landplane is Big Rig

Another rather unusual piece of equipment used by Shipp in leveling operations is the landplane, a California development. Shipp uses a plane 65 feet long mounting a 12-ft. blade. The long wheelbase on the landplane maintains even pressure on the ground to take down slight humps and fill in minor low spots so that the water will be evenly distributed between the borders of the flooded land.

Continued on page 50

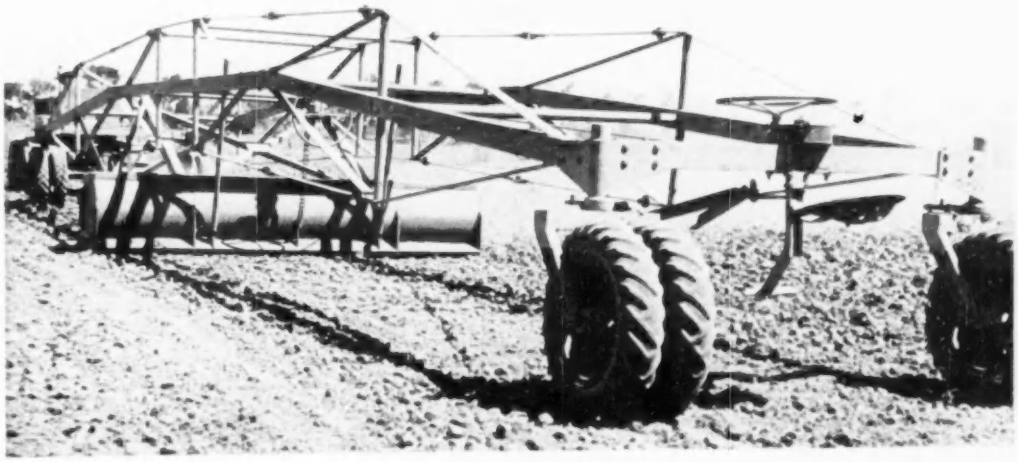


• Subsoiling makes a very small dent on the surface, but this Allis-Chalmers rig drawn by an Allis-Chalmers HD-7 crawler does a tremendous job of ripping hardpan 30 inches down.



• Right: This Phoenix-built rig makes possible quick, one-man moves of all types of leveling and irrigation equipment. The welded frame is of 3-in. triple strength pipe. Log chains attached to pipes, revolved by hand cranks operated through Ford "A" rear ends, raise equipment off ground for travel. A complete set of tillage attachments can be moved at one time at top tractor speed.

• Below: This 65-ft. landplane puts a billiard-table finish on leveling jobs with its 12-ft. blade. Good leveling is essential to the flooding type of irrigation used around Phoenix.



Something New in Meta

. . . is the $3,000,000 "push button" setup of Round Mountain Dredging Corp. in south central Nevada. Electric shovel with 7-yd. dipper works against 100-ft. dragline-scarified face to supply 17,000 tons of disintegrated porphyry gold ore per day to an ultra-modern mill.

By E. B. Spahman

EVEN if one did not consider the many post-war factors unfavorable to gold mining, Nevada's Round Mountain operation would be both daring and amazing in its approach to the severe problems presented by terrain and ore properties. Rising costs uncompensated by any increase in the $35 per ounce pre-war price of gold have been met by ideas and concepts new to the metal mining field.

The mine is on the southwest flank of the mountain from which it derives its name. Located on Nevada highway 8a about 55 miles northeast of Tenopah, Nev., this is the largest North American operation since well before the war. Its 17,000 tons-a-day pit production would be more expected in a copper mine than one extracting gold ore.

Tonnages are Impressive

From a tonnage standpoint, Round Mountain is impressive by any yardstick. The operation has been premised on a deposit of 67,000,000 tons of disintegrated porphyry containing recoverable .635 fine gold associated with silver at a ratio of about 2:1. In today's terms the ore is of a relatively low-grade necessitating continuous and inexpensive extraction, conveying and milling with a minimum of manpower.

Round Mountain is in a highly mineralized area mined in earlier days for both its lode and eroded placer values. Two crossing vein systems occuring over a wide zone make up the area comprising the disintegrated gold orebody. Eroded material extends down the slopes to constitute the mining areas. The ore in the slopes is irregularly shaped, like most dryland erosion material, and quite different from the water rounded particles making up the usual stream bed placer deposit.

The Round Mountain system of veins was discovered in 1906 by Louis D. Gordon, now engineer with the RFC in Reno. A year later, in 1907, Thomas "Dry Wash" Wilson discovered gold in the alluvium. By 1936, $8,000,000 had been recovered from the vein and placer deposits. The existence of a great tonnage of low-grade placer ground was not a secret —it had been worked by a 1,000-yard-per-day dryland washing plant built in 1934 by Nevada Porphyry Gold Mines, Inc. Present large-scale operations are not yet a year old.

• Unique process of gold recovery begins in the shadow of Round Mountain, where three Bucyrus-Erie machines begin the removal of ore from the pit. The 54-B dragline on bank swings scarifying plate to break up ore and eliminate need for blasting. Work horse of pit is 170-B shovel which loads 17,000 tons daily to hopper at big conveyor. 54-B dragline at right tips grizzly to dump heavy boulders.

l Mining

Although the customary way to tackle the deposit would employ a bucket-line floating dredge, a variety of conditions necessitated a radically different approach here. The great thickness of the deposit — averaging well over 200 feet—and the dissemination of values prohibits the use of a conventional dredge. Largest of such dredges available today would probably not be able to dig more than 125 feet below water surface.

Further, even granted an ample supply of water, the porous nature of the disintegrated ore and the steep slope of the bedrock would make it impossible to hold a dredge pond. Another telling factor against use of a dredge is the large number of big boulders in the deposit.

The Round Mountain pit system, something new to metal mining, was adapted from practices proved over the past several years in West Coast gravel pits — notably those around Los Angeles. Basic requirements facing the designers went something like this:

1. Equipment must be designed to take advantage of a large, well-localized tonnage with a minimum of hauling and equipment-moving costs.

2. A good substitute must be found for blasting (too much exposed equipment in the pit which might be damaged).

3. A high working face must be maintained for efficiency, yet slopes must be controlled to avoid endangering equipment.

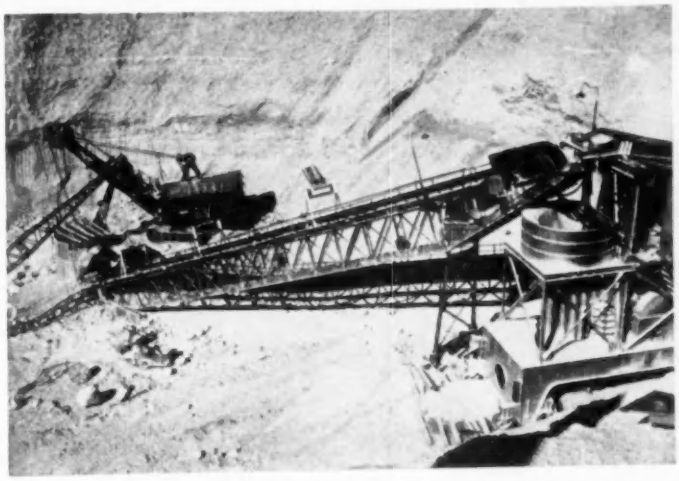
In brief, the solution involves a dragline on the highwall scarifying the face to drop ore to a shovel working in the pit. The shovel feeds a pendulum-conveyor-mounted hopper which in turn feeds a crusher car and thus the mill via belt conveyors.

The entire installation resembles a large dredge built on dry land. A central washing plant represents the dredge body proper; an electric shovel in the pit and conveyor system leading to the plant, the digging ladder; and two adjustable waste conveyors, the stacker.

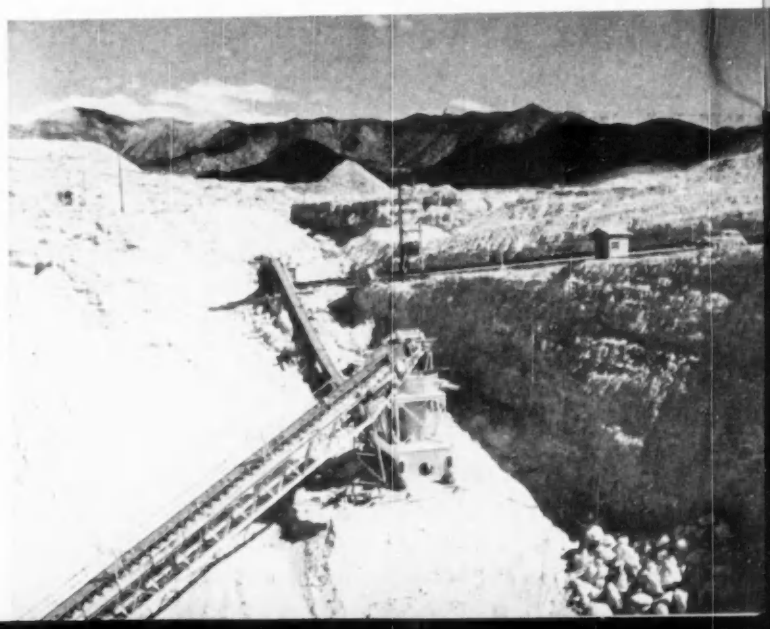
The dragline situated above is a Bucyrus-Erie 54-B diesel with 80-ft boom to reach over the bank. The rig swings a 7,000-lb. scarifying plate equipped with seven teeth. This operation is an important factor in that the breaking action eliminates need for blasting the semi-consolidated material. The plate is worked up and down the bank, loosening the sharp, angular porphyry which then slides down the 70° slope to the pit bottom. This highwall is now 120 feet, will reach a maximum of 370 feet high.

In the pit, ore is bailed onto a grizzly by a Bucyrus-Erie 170-B electric shovel equipped with a 7-yd. light-weight dipper. The big shovel carries approximately 10 tons each swing, must make (and easily does) 1,700 swings in a 16-hour day to keep up with the hungry plant. Although material is loosened above by the dragline, the shovel must dig the lower part of the face.

The grizzly is mounted on a hopper set at the end of a pendulum-conveyor section 150 feet long. Since the shovel has a 75-ft. working reach from dig to dump, a circular area 225 feet in radius is excavated without shifting any equipment except the shovel and the rotating pendulum.



• Conveyor in pit delivers ore from shovel to crusher car-conveyor set-up equipped with Birdsboro 42 x 36-in. jaw crusher. Entire unit is mounted on rails so that it can easily be moved and extended in 60-ft. increments into pit.



• Conveyors take crushed ore from crusher car to stockpile. Oversize from grizzly is bulldozed to waste area (right).

• Above: Junction box delivers ore to section leading to stockpile. Interlocks shut down the whole system in event a belt fails anywhere along the line.

• Left and below: 200,000-ton stockpile is fed by 2,500-ft. Goodyear belt (in two sections) with Link-Belt idlers and adjustable stacker tower. At far right is ore washing and recovery plant. The mill was designed and much of its equipment supplied by Yuba Manufacturing Co.

The grizzly is made up of five bars on 30-in. spacings. The center three, subject to the greatest impact and abrasion, are of high manganese steel and weigh 3,200 lbs. each. Hinged, the grizzly is tilted at frequent intervals by the hoist line of a second Bucyrus-Erie 54-B diesel dragline. This rig dumps all plus 30-in chunks and boulders on the pit floor. A Caterpillar D-8 dozer pushes this unwanted material to a corner of the pit.

In addition to its grizzly-cleaning assignment, the 54-B uses a 2½ cu. yd. bucket at intervals to clean up the pit floor around the shovel. The rig also shifts the hopper car and pendulum in its circular arc, moves up the whole assembly when it's time for a fresh "bite."

The hopper is a container 14 ft. in diameter. Minus 30-in. material passing the grizzly is fed to a 60-in. Goodyear belt by a Jeffrey vibrator. The 150-ft. pendulum-conveyor discharges to a crusher car-conveyor section. As the shovel advances, extra sections are added to this conveyor.

Crusher on Rails

The crusher car is equipped with a Birdsboro 42x56-in. jaw crusher driven by a Westinghouse Linestart 100-hp induction motor through a 12 V-belt system with 4:1 reduction ratio. The entire unit is mounted on rails so that it can easily be extended in 60-ft. increments into the pit as the pendulum reaches for a new mining arc.

Two stretches of 42-in. Goodyear belt with Link-Belt idlers—an 1,800-ft. section discharging at a transfer box to a 700-ft. section—transfer minus 12-in. ore up the slope from the crush-

er car to a 200,000-ton stockpile via a stacker tower.

Ore is withdrawn from the stockpile by two Jeffrey vibrating pan feeders. Discharge is to a 36-in. belt conveyor operating in a 10x10x190-ft. reinforced concrete tunnel. Exact rheostat flow regulation works in conjunction with a Merrick Weightometer cumulative tonnage recorder. Interlocks shut down the whole system in event a belt fails anywhere along the line.

Mill Operations

The mill is similar although on a larger scale, to the customary dredge installation. It consists of the 9x50-ft trommel screen which separates the feed from the 36-in. stockpile conveyor into a coarse oversize that is rejected to tailings (via a 30-in. American belt stacker) and a fine product containing the gold values.

This fine product is sized into coarse sand and a very fine sand by a battery of 4x12-ft. Tyler Tyrock vibrating screens. Coarse sands go to four 42x42-in. 4-cell Yuba jigs, to gold tables, to cleaner jigs, and then to a ball-mill, classifier, and amalgamation circuit. Very fine sands are similarly processed. The mill was designed and much of its equipment supplied by Yuba Manufacturing Co.

The highly mechanized pit operations and the large stockpile make possible a continuous flow to the mill at all times—one of the secrets of the Round Mountain operations success.

Water Problem Licked

Although the company had acquired water rights for use of nearby Jett Canyon Dam, the immediate supply proved inadequate. It was discovered that the old structure did not go to bedrock and consequently much of the available water in Jett Creek was flowing under its foundation. The company's solution was to excavate to bedrock a short distance below the old dam and construct a new retaining wall across the entire canyon, thus sealing off water which had previously been lost. Supply to the mill is by gravity through an 8-mile-long 14-in. pipeline.

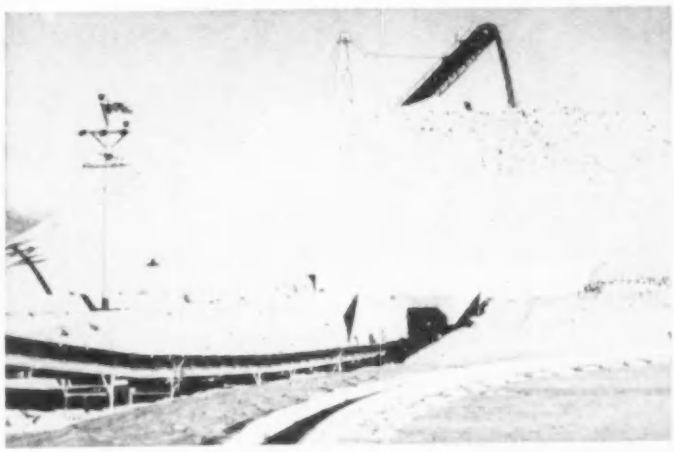
For "water insurance" in the dry season when Jett Canyon is sometimes dry, two wells, a 1,000-gpm and a 2,000-gpm, were drilled midway along the main pipeline. Both wells are similarly equipped with Wintroath deep-well pumps which deliver to surface storage tanks. The entire water supply is automatic and works without manpower at pump stations. Regultron controls respond to a plant system in the storage tanks at the mill to start well pumps as additional water is needed.

Electric power used nearly everywhere in the operation is supplied by California-Nevada Power Co. via a 14-mile 3-phase 55,000-v highline to a transformer substation near the mill.

Preliminary designs for the operation were started in 1947 and completed last year. The mill is now handling [illegible] of its 17,000-ton rated capacity, is worked 24 hours a day. The mine supplies the needs of the mill with a 2-shift operation. As soon as the present shakedown period is over, refinement of equipment is expected to enable the plant to step up to 17,000 tons a day at which time the pit work will go to three shifts.

Round Mountain Dredging Corp. is a wholly-owned subsidiary of Yuba Consolidated Gold Fields and the Fresnillo Corp. F. C. van Deinse, head of Yuba, is president of the new corporation and W. C. Browning is vice president and general manager. Edwin H. Osher is field superintendent at Round Mountain, Macy Meisenheimer general foreman, and Mort Pratt, metallurgist.

• Beneath stacker, Caterpillar D8 dozer keeps drawpoints supplied with ore.

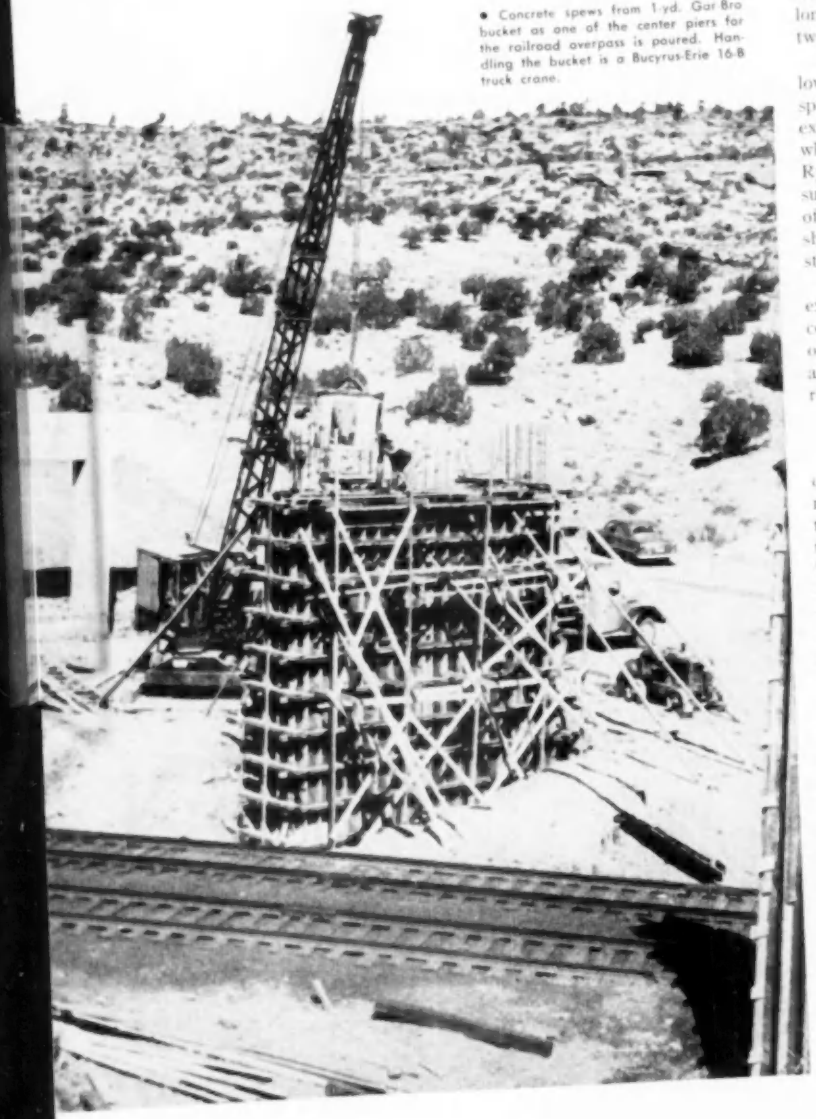


• Discharge is to a 36-in. belt conveyor operating in a 10 x 10 x 190-ft. reinforced concrete tunnel. Exact rheostat flow regulation works in conjunction with a Merrick Weightometer cumulative tonnage recorder.

New Bridges for Mai

J. H. Ryan, Albuquerque, solves unexpected piledriving and borrow problems on his $425,000 U. S. 66 bridge and overpass job at the Rio Puerco River in northwestern New Mexico.

by Robert J. Green



• Concrete spews from 1-yd. Gar Bro bucket as one of the center piers for the railroad overpass is poured. Handling the bucket is a Bucyrus-Erie 16-B truck crane.

THIRTEEN miles west of Gallup, where U. S. Highway No. 66 winds through western New Mexico near the Rio Puerco River, the New Mexico State Highway Department is making a major change in the "Main Street" of America. The job calls for a bridge across the Rio Puerco River, an overpass across the Santa Fe RR one mile west, and a revamped mile-long 24-ft. bituminous highway in between.

J. H. Ryan, Albuquerque, was the low bidder last fall at $425,000. In spite of a severe winter which slowed excavation, and contract specifications which split the timing on earthwork, Ryan's men and equipment have made such good progress on other features of the work that the end of this month should see the finish of a project started last October 3.

Major items are 134,000 cu. yd. of excavation and fill, 1,600 cu. yd. of concrete in structures, 827,000 pounds of structural steel, 5,000 tons of ballast and leveling course, piledriving, and rock riprap.

Old Bridge Outmoded

Ryan chose to begin work on the contract at the Rio Puerco Bridge. The new structure is only 200 feet south of the old narrow steel truss bridge, whose top cross members are now nicked and bent by the passage of heavy interstate trucks with loads too high to clear. The old bridge has for years been a source of accidents. New Mexico highway department engineers believe the job was more than justified by that one factor.

The old bridge was not junked immediately, however. It remains in service, carrying 3,000 to 4,000 vehicles daily, while the new bridge is under construction.

The new bridge is designed for H20 S16 44 loading—more than adequate to carry the heavy loads which now use Highway 66. Three hundred and ten feet long, it consists of a suspended span and two anchor spans. Two main piers of reinforced concrete rest on wood bearing pile clusters. Two abutments, also of reinforced concrete, rest on piling and are keyed into solid embankment at both sides. These piles were sunk through 20-ft. deep holes

n Street

drilled through the hard compacted embankment.

The bridge crosses the Rio Puerco at right angles on a tangent alignment. Its concrete deck, 30 feet wide from curb to curb, will rest on steel girders placed longitudinally from abutment to pier to pier to abutment. In recent years the New Mexico highway department has built many structures similar in design. In fact, Ryan had just finished two similar bridges near Roswell when the outfit moved to Gallup.

Piledriving Poses Problems

At first, Ryan's key men were optimistic. There was reason to believe that good foundation lay not too far from the surface of Rio Puerco's shifting sandy bed. They moved in expecting to drive 50-ft. piling with ease.

• Borrow for overpass approach fill is loaded to 4½-yd. Ford truck by ¾-yd. Bucyrus-Erie 22-B shovel at 125-yards-per-hour clip.

• Big rocks for rip rap are snaked out of quarry by cable slings handled from dipper tooth of 1½-yd. shovel.

• At railroad overpass site, LeTourneau bulldozer on Caterpillar D-8 tractor levels fill hauled ¼ mile from the borrow pit (top photo).

• Merely a fouled spark plug, but Superintendent George Young (right) is johnny on the spot to see that his maintenance man gets the Ingersoll-Rand compressor back on the line quickly.

• Then the tractor teams up with LeTourneau 3-drum sheepsfoot to compact a 6-in. lift for the overpass approach fill.

However, several creosoted timber test piles showed nowhere near the bearing that had been expected. A long test pile would go down 50, 60, then 70 feet before it fetched up. This was going to be hard.

Original plans called for 75 piles under each pier: 30 on a 4:12 batter, 30 on a 2:12 batter, and 15 vertical piles. The long piles automatically ruled out the possibility of an easy job.

A skid rig with 80-ft. leads and 2-drum hoisting engine mounted on 16-in. I-beams drove piles for No. 1 pier. But progress was not good—the batter piles were hard to spot and drive. Production was only 12 piles per shift.

No. 2 pier was therefore driven by a different method—using a new 38-B Bucyrus-Erie crane equipped with a set of hanging leads on a 75-ft. boom. A 3,000 Super Vulcan steam hammer in the leads was connected to a 75-hp Oil City boiler used previously with the skid rig. State engineers co-operated by eliminating in some cases the 4:12 batter and substituting a 3:12.

Batter Piles Troublesome

In a few days the 38-B had increased driving production to about 18 piles per shift, although batter piles still gave trouble. Great care had to be used to drive them safely. After the 38-B picked up the pile and set it in the leads under the hammer, the necessary adjustment for batter had to be made. This was done usually by setting the base of the leads and the point of the pile in position, and then backing the crane away from the site until the leads lay on the proper batter. Steam was then valved to the hammer and the pile driven to grade.

Abutment piles, and those under the Santa Fe overpass at the opposite end of the project, were somewhat easier to drive. Shorter lengths were possible. A Bucyrus-Erie 19-B with 55-ft. boom and 40-ft. leads did that part without incident. The hammer and boiler were the same used to drive main pier piling.

Another driving variation had to be used on the overpass abutments, because it was impossible to punch piles through the dense compacted embankment. A hole was drilled for each pile, using a Buda-Hubron earth boring machine, and the 19-B then drove the sticks through the tight fitting holes.

When the pile job was finished, a recapitulation showed 194 piles seventy feet long, 15 fifties, 33 forties, 15 thirty-fives, and 78 pieces only twenty-five feet long—used in two piers for the overpass. Everybody connected with piledriving was happy when it was over, for the possibility of tipping over a crane, or having a serious accident, was still fresh in their minds.

Pier and abutment forms consisted of wood panels, with plywood facing nailed to 2 x 4 studs, prefabricated in a headquarters carpenter yard near Rio Puerco Bridge. Double 2 x 4 wales strengthened the forms against internal concrete pressure. Universal steel form ties on 3-ft. average centers passed through the concrete pours. Wooden 4 x 6 shores kicked back to ground braces where considered necessary.

Form panels were erected and stripped by a Bucyrus-Erie 16-B crane, truck mounted on a Diamond T. The same machine also handled, on a 2-part line, the 1-yd. Gar-Bro concrete bucket which transferred fresh mix to the pours. Transit-mixed concrete was supplied by two Rex Motomixers, and two Smiths hauling from the commercial plant of Gallup Sand and Gravel Co.

With the exception of the crane operator and foreman, only three men were used in the concrete crew. One man, working on the ground, spotted the truck mixers. Two men on top of the pour dumped the bucket and operated a small Ingersoll 105-powered Ingersoll-Rand vibrator.

Riprap Work

While concrete crews were busy with their work on both bridges, Ryan opened up a small quarry for the production of 1,500 cu. yd. of riprap.

● New overpass will dwarf present structure (background), which is too narrow with too little overhead clearance. Tracks are those of the Santa Fe RR.

Held in place by a cribbing of vertical railroad rails, a heavy 4-ft. blanket of this stone is expected to prevent scour along bridge toes when the river floods.

Downstream and about 500 yards south of the bridge is an exposed ledge of hard sandstone. Two Ingersoll-Rand JB-55 Jackhamers, with 12-ft. Ingersoll-Rand steel and Jackbits, were powered by a 210-fpm Ingersoll-Rand compressor. In general, 1½-in. holes were spaced four feet apart both ways and shot with ½ pound of Hercules 40% gelatin per cu. yd.

Specifications call for plus 3-cu. ft. riprap. Seventy-five per cent has to be ½ cu. yd. and over, 50% 1 yard and over, and 10% in pieces at least 2½ cu. yd. each. Large stones required make possible the low powder ratio. The size of the job did not warrant setting up bit sharpening facilities, and drill bits were either worn out on the project or saved for resharpening later at the company's Albuquerque headquarters.

The heavy job of loading this stone fell to the Bucyrus-Erie 38-B which by this time had discarded piledriving equipment and picked up its shovel boom and dipper stick. Small rock was loaded direct by the 1½-yd. Bucyrus-Erie dipper, but all the larger rocks had to be handled separately. Two men encircled these big stones with light cable slings, hooking to a dipper tooth.

Three Mack trucks with special flat bed Fruehauf trailers capable of hauling 30-ton loads carried riprap from quarry to bridge. Slings were again used to unload and place the rock; this time swung by the Bucyrus-Erie 19-B crane which had also finished its piledriving stint. The largest rocks were placed along the toe, grading toward smaller sizes as the riprap wall went higher along the bank. Large rocks were all keyed into place and locked against each other as much as possible. Ordinarily the Rio Puerco is a dry stream, but in flood season any riprap protective wall requires strength to resist the rushing water.

Start Santa Fe Overpass

Shortly after work was well underway on the Rio Puerco Bridge, the site of the Santa Fe Overpass was opened on the west end of the job. This reinforced concrete overpass also replaces an existing structure which time has made obsolete.

Continued on page 64

• Men use air tools to tamp fill around east abutment of Rio Puerco bridge.

• 1½-yd. Bucyrus-Erie shovel subs as a crane to load large rocks for rip rap to Mack-drawn Fruehauf 30-ton flatbed trailer. The shovel handled 1,900 cu. yd. of rock in this quarry, loading smaller sizes with its dipper.

• After the haul to bridge abutment, rock is unloaded from Mack-drawn Fruehauf trailer and placed by a Bucyrus-Erie 19-B crane. The 4-ft. blanket of rip rap is necessary to resist scour of water from heavy rains common to this region.

CHAMPION

WORKIN'EST T

Here are some of the exclusive features that give the TD-24 its matchless work capacity:

1. 180-h.p. International diesel engine with gasoline-conversion starting and unmatched "lugability".

2. Synchromesh transmission for easy shift-on-the-go operation; plus eight speeds forward and eight reverse.

3. Planet Power drive, smooth and rugged, for instant speed change up or down one gear without declutching.

4. Planet Power steering to provide power on both tracks in gradual turns and permit feathered or pivot turns.

5. Separate reverse lever for quick change of direction of travel in any of the eight transmission speeds.

6. High-speed track assemblies with new recoil mechanism that holds front idlers in position against full-load track pull.

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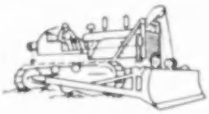

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● *"THE TD-24 is definitely outhauling every other tractor on the job. It will do so much work that we are sure our job costs will show a great saving!"* That's the report of the foreman on the 247,000-yd. University of Maryland stadium project. ● *"I don't have to stop on any grade,"* the operator reports, *"and we have 25% or better on this job. Why, I just go up in 4th gear easy while the other tractors have to switch to low to make it."* And the TD-24 hauls a 17-yard scraper, heaped! ● Yes, the TD-24 is the "workin'est tractor" on any job. Yet, its operator is the worker with the easiest day! See your International Industrial Power Distributor. Get a TD-24 demonstration. Discover how you, too, can save job time, cut costs, earn extra profits.

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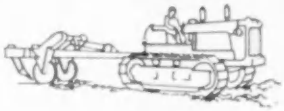

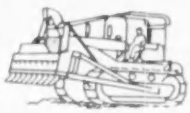

"Highball" Clearing at Hungry Horse

Wixson and Trisdale utilize age-old leverage idea in a brand new way to clear 15,000 acres of Montana timber land at a $2,000,000 saving.

WHEN original bids for clearing 15,000 acres of forest were rejected late last year by the Bureau of Reclamation as "too high," joint venturers Wixson and Trisdale bid nearly $2,000,000 less on the second try. They were gambling on success of a "fantastic" scheme utilizing 8-ft. diameter steel balls for this work in the basin of Hungry Horse Project under construction near Columbia Falls, Mont. Not only has the idea achieved a tremendous financial saving, but the speed of the new clearing method will insure storage of water in the reservoir well ahead of schedule.

Basically, the system now in use utilizes a pair of diesel crawler tractors pulling at free ends of up to 900 feet of 1¾-in. wire ropes attached to an 8-ft., 4½-ton steel ball. The ball serves to keep the cable high enough above the ground to prevent snagging on stumps. The name "highball" is appropriate to the new method not only for its large balls, but also because with its use timbered land is cleared at a rate which would have been considered fantastic two years ago.

The joint contractors started their work on the initial 7,210-acre clearing contract (for $1,735,880) in October 1948 trying experimentally several methods of using tractor-drawn cables to snag trees. This method was excellent for the burned-over areas but not efficient enough for heavy timber. So the idea of the huge balls was hit upon.

The 8-ft. diameter balls are constructed of ¾-in. boilerplate with 6-in. diameter steel shafts mounted in Timken roller bearings. Eight to 10 gallons of oil are kept in the ball for bearing lubrication. Five balls were fabricated by Consolidated Western Steel Co. in San Francisco and were assembled in the Redding, Calif., shops of Wixson and Crowe, Inc., and J. H. Trisdale, Inc., and trucked to the reservoir area.

It was soon realized that the fastest and most efficient setup consisted of one ball pulled by a pair of tractors. In making a "pull" the two tractor operators bulldoze their way through the timber on approximately parallel paths several hundred feet apart. The distance between tractors varies with the terrain and the sizes of trees to be snagged down. In light going the tractors merely move through the timber leveling everything between them with the ball-elevated loop of rope.

However, in heavy stands of fairly large trees, tractor winches became important. The operators permit rope to unreel as they move ahead. When winch drums are nearly empty, tractors are anchored against trees or stumps, and winches set to reel in. The greater pull of the winches together with the leverage gained from elevation of the cable makes possible pulling down of trees up to four feet in diameter. The cable and ball crash through timber as fast as a man can walk.

Large Trees Uprooted

Practically all large trees are uprooted rather than snapped off like

Continued on page 46

• Two-ft. thick tree snaps like a match stick before the relentless force of the cable. Foreshortening effect of camera lens makes Allis-Chalmers HD-19 tractor with Carco winch seem to be in danger. Actually, it is well out of range of the falling tree. Ball is eight feet in diameter, weighs 4½ tons.

• Left: This is a rare photograph since ordinarily the two tractors work so far ahead of the ball that it is impossible to see all three at once. This picture shows the complete devastation left in the wake of ball and cable. The tree toppling near the ball is approximately four feet in diameter and more than 200 feet tall. These are Caterpillar D8 tractors mounting Hyster winches.

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THE B-170 (15-yard struck capacity) operates without a pusher in normal loading. It has greater struck capacity than any other scraper available for self loading. Like other Bucyrus-Erie scrapers, it loads fast and easy, dumps quick and clean without requiring extra power. It discharges the load at traveling speed, with no stop for shifting gears. Front bowl lift provides extra stability for backsloping or finishing on steep grades.

THE B-250 (22 yard struck capacity) is for loading with pusher assistance. It's the largest scraper in current production available for use with any crawler tractor. It has the same excellent operating characteristics as the B-170. Its big capacity opens up great possibilities for high production on relatively long haul work. Both scrapers are built like battleships and have ample tires for flotation and low rolling resistance.

The BIG RED team — TD-24 tractor and B-170 or B-250 — is a natural for the smart, progressive contractor who is willing to overhaul his methods to get lower cost dirt. Get the complete details!

BUCYRUS-ERIE COMPANY
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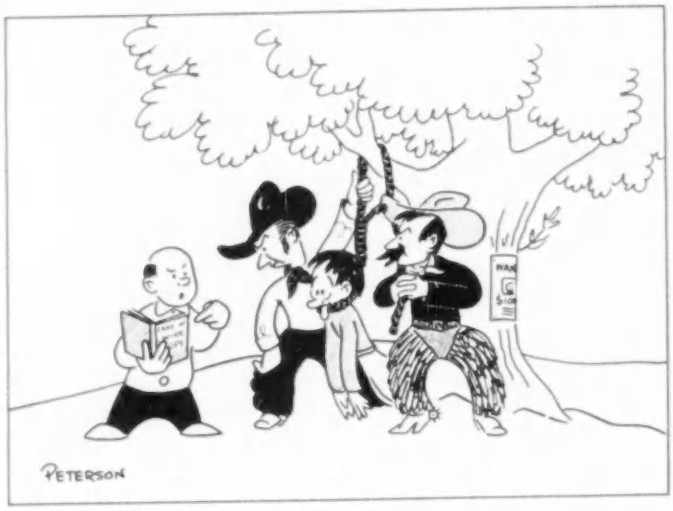
Care of Wire Rope

. . . is the subject of this month's down-to-earth safety talk by "Foreman Flanagan." Maintaining wire rope is pretty important business to him. He points out that wire rope may lose 50% of its service life and safeness due to common abuses.



"Wire rope should never be kinked or twisted."

IT'S a funny thing, men, but it's true that wire rope is one of the most widely used and, at the same time, most misused articles of industrial equipment. At the start of this job, we saw wire rope at work on the scrapers, bulldozers and shovels which cleared and graded the site. Now we see it on winches, lifts, support lines—in fact all around us in the various stages of construction. Later, it will be used even when the job is finished and we're gone, because wire rope will be installed in the elevator machinery.

Before you use wire rope, get acquainted with the charts and tables which tell exactly what you may expect of any type or size of line. These charts make it easy to find out the load limits, including those of various kinds of slings. You can find instructions and illustrations on proper methods of splicing, socketing, and binding rope ends, too.

But, I want to caution you that all charts and tables on wire rope efficiency are based on new rope or on used rope of good quality! The performance you may expect from abused rope is impossible to determine. No one I know can estimate the rope's working strength when it is kinked, mashed, rusted, or defective because of some other cause.

Let's look at a few ways that wire rope can be damaged. Did you ever see a carpenter drive a nail through the handle of his hammer in order to hang it up out of the way? Of course, the answer is no. Yet, just the other day, I saw one of you hang up a coil of wire rope by driving a nail through the strands.

Can Cut Rope Cost 50%

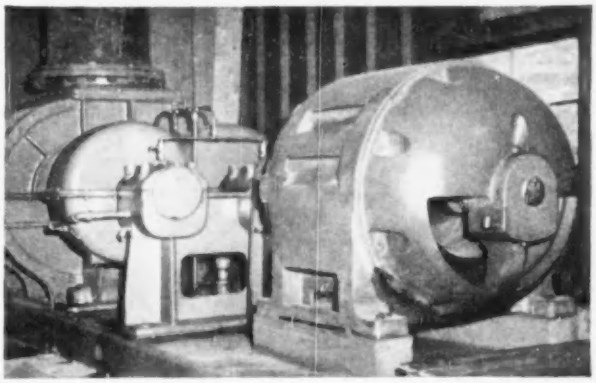
Or, did you ever see a painter throw his brushes on a pile of empty cement sacks or leave them outdoors until he needed them again? I don't have to single out anyone when it comes to that because such practices have been all too common around here. I'd say wire rope loses 50% of its service life and safety when misused one way or another. In other words, we can cut rope costs up to 50% by taking better care of the stuff.

Now let's take a look at some of the things we should know. Rust and corrosion can be prevented by storing rope in a dry, cool location—one that's free from sand, dust, dirt, plaster, lime, and like substances. If there are acid fumes around, rope should be treated

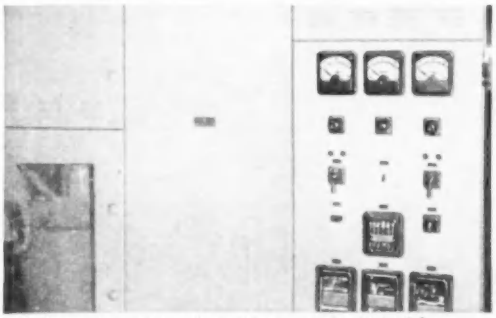
Continued on page 47

"Proper splicing, socketing lengthen wire rope life."

Ventilation for the Delaware Aqueduct tunnel is provided by blowers driven by sturdy G-E 200-hp induction motors. ▶



▲ Muck is efficiently hauled by 18 G-E battery and battery-trolley locomotives.



▲ Adequate d-c power for trolley service is obtained from eight G-E 150-KW stationary mine-type mercury-arc rectifiers specially designed for this project.

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Dumptors* stand up under the severest shocks of shovel-loading 1½ to 2½ yards or rock at a pass because they're built extra tough for rock handling. There's more than a ton of net vehicle weight for every ton of payload.

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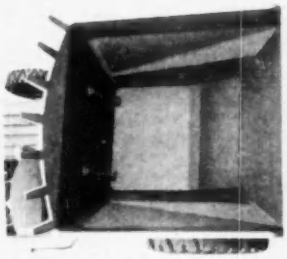
DUMPTOR BODY HEAVILY REINFORCED All-welded sides, ends and bottom of heavy-duty 6-yard Dumptor body are heavily ribbed with 4" channels. High-carbon steel gives extra strength and protection at stress points...where the abrasive action of rock handling is most severe.



KICK-OUT PAN adds an extra 3/16" high-manganese steel plate on top of sturdy Dumptor bottom . . . breaks suction of sticky materials for fast, clean dump. Big 8' x 8' top gives easy-to-hit target for fast loading over the side or end with less spillage.

1 SECOND GRAVITY DUMP

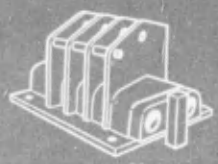
. . . Operator trips body release lever . . . gravity instantly tilts scoop-shaped body. One second later, load is out and Dumptor is off for another load. No slow-moving body hoists . . . no body hoist maintenance.

CK910x

Johnson Faster Operation for EXTRA TONNAGE

Most Sizes Now Available for Quick Delivery from Distributor's Stock

⅝ to 2½ yard General Purpose Wide Re-handling Heavy-Duty Digging.



FASTER OPERATION, because lower sheaves are angle mounted to maintain natural cable alignment.

FASTER OPERATION, because double hinge construction gets big bites with fast closing in any material.

FASTER OPERATION, because sealed needle bearings on closing sheaves eliminate friction.

FASTER OPERATION, because all-welded claims, smooth inside and out, dig and dump with less resistance.

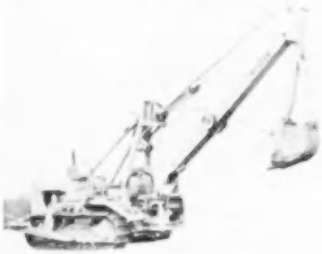
THE C. S. JOHNSON COMPANY

KOEHRING SUBSIDIARY, • CHAMPAIGN, ILLINOIS

Equipment

You Ought to Know About

½-Yd. Tractor Excavator



Manufacturer: Hyster Co., Portland 8, Ore.

Claims: The Hyster D6 Hystaway, tractor-mounted ½-yd. excavator, may now be equipped with the hoe front which was previously available only for D7 and D8 Hystaways. Other variations already manufactured for the D6 include interchangeable crane, dragline and clamshell fronts, all of which are designed for mounting on the job. Utility use of a dozer blade on the front of the tractor is still possible, and it takes less than one hour to dismount the Hystaway unit to permit full production bulldozer use. Standard width of the hoe dipper is 33 inches, but for narrow ditching requirements a 24-in. dipper is also available.

Plastic Pipe

Manufacturer: Carter Products Corp., Cleveland 5, Ohio.

Claims: Flexible and rigid Carlon plastic pipe is guaranteed against rot, rust, and electrolytic corrosion. It is 1/7th the weight of steel and can be used for drinking water, drainage and irrigation systems, concrete incased electrical wiring conduit, and many other applications. Flexible pipe is available in diameters up to six inches and in lengths up to 400 feet, depending upon diameter.

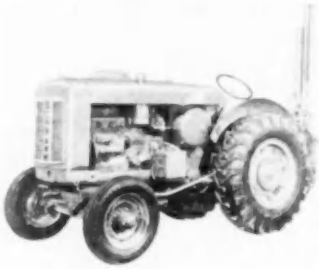
Rigid pipe is furnished in diameters up to eight inches and is shipped in 20-ft lengths. No special tools or materials handling equipment are required to make installations. When used in the field, flexible pipe can be curved to follow a ditch line or irregular surface contour. Because its rate of expansion is greater than that of freezing water, flexible Carlon can be installed above or below frost level.

Pipe is joined in a conventional manner through the use of fittings which permit plastic-to-plastic or plastic-to-metal connections. Standard size metal and plastic couplings permit attachment to previously installed systems.

Tractor-Compressor

Manufacturer: Schramm Inc., West Chester, Pa.

Claims: The Pneumajack consists of a pneumatic cylinder mounted on a vertical column at the rear of the Pneumatractor, with a D-55 or D-45 Schramm rock drill mounted on piston rod of pneumatic cylinder. It is recommended for drilling holes in pavements, for mud jacking, setting parking meters, production drilling in quarries, road building, excavating, grouting, etc. Assembly can also be furnished with two BT-32 backfill tamp-



ers or a B-80 paving breaker, mounted on air feed and lift. The tools listed all use the same basic air cylinder that feeds and lifts them. Tools can be removed and hand held. With proper adapter, tools can be used separately on one air cylinder.

Improved Axle

Manufacturer: Little Giant Products, Inc., Peoria, Ill.

Claims: Design improvements in the Trailing Axle line bring greater strength, less maintenance cost and increased load capacity to two models designed for 1½ to 5-ton trucks. Model is designed for use with two-axle trucks, to almost double load capacity by the installation of third axles and wheels directly behind the rear, driving axle.

Oversized axles and heavier castings are augmented by the new, completely rubber-bushed ends of the torque arms which eliminate shock from starting and stopping. All parts — including heavier manganese springs for increased load capacity, and certified malleable or steel shackle castings—are now 20% heavier than recommended to provide an unusually high safety factor.

Hardfacing Alloy

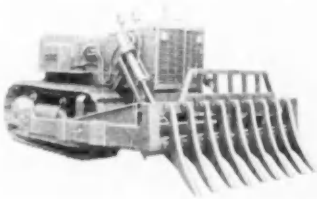
Manufacturer: Air Reduction Sales Co., NYC, 17.

Claims: Designed primarily for applications involving high stress abrasion with medium impact, Aircolite 59 is composed principally of chromium, molybdenum, carbon and iron. It has a low coefficient of friction, and therefore, acquires a high polish in service. The deposit maintains its high hardness at temperatures up to 800° F. The new alloy is available in bare form for oxyacetylene application or coated for electric application. Aircolite 59 is recommended for building up surfaces subject to high stress abrasion and metal-to-metal friction where impact is moderate and abrasion severe. It is suited to many applications in steel mills, foundries and metal working plants.

Ripper

Manufacturer: Baker Manufacturing Co., Springfield, Ill.

Claims: The Root Ripper, designed for general land clearing operations, may be purchased as an interchangeable attachment for cable and hydraulic bulldozers and gradebuilders, or as a complete machine. The new tool is recommended for removing and piling brush, roots, rocks or boulders. Attachment consists of nine teeth, securely bolted to horizontal cross members, which are rigidly tied together by



brackets for quick attachment to the bulldozer or gradebuilder frame. Teeth are one-piece steel castings, correctly curved to produce a rolling action to material handled so that dirt is shaken loose and filtered between the teeth. Further information is available from the manufacturer in bulletin 887.

Cab Cooler

Manufacturer: International Metal Products Co., Phoenix, Ariz.

Claims: Designed for easy and quick mounting on the cab roof of shovels and trucks operating in areas of excessive heat and dust, a small lightweight cooler with high air volume is available in both fan and blower types. Air is filtered and cooled through four wood fibre pads on the four sides of the cabinet. Filtered and cooled air is sent downward through base of cooler directly into the cab through an opening in the roof. The cooler can be equipped with a grill having directional fins to divert cooled air to any part of the cab. Where needed, more than one unit can be used to send a blast of cooled air directly onto any spot.

The cabinet is 24⅝ in. high, 26½ in. wide and 22 in. deep. Its four wood fibre filter pads are chemically treated to absorb water 30 times faster than normal. The blower model mounts an 8x11½-in. blower powered by a ½-hp motor. The fan unit has a 14-in. blade and is equipped with a two speed switch. The cabinet has a 16-in. square recessive opening in the base making it possible to mount the cooler over nearly all types of ventilator openings. It can be mounted or removed in a few minutes without damaging the cab roof.

Bucket Loader

Manufacturer: N. P. Nelson Iron Works, Inc., Clifton, N. J.

Claims: Available on wheels or crawlers, machines handle any loose material up to three cu. in. either from stock piles or bank run sand and gravel

pits. Rated loading capacity is three to four cu. yd. per minute, maximum weight of 150 lbs. per cu. ft.

Features such as hydraulic boom control, Timken bearing elevator, 3-point mounted spiral feed shaft are supplemented by wear-resistant manganese steel bucket chains, sprockets, bucket edges and spiral feeder edges; more powerful engine and larger Twin-Disc clutches with double roller chain transmission drive. The hoist has dual double-acting cylinders.

Detailed information booklet is available from the manufacturer.

Small Dozer

Manufacturer: R. G. LeTourneau Inc., Peoria, Ill.

Claims: The Super D Tournadozer is 3,500 pounds lighter, equipped with a smaller capacity bowl than the Super C, and is powered by a 122-hp diesel engine. Capacity of the bowl is 1.8 yards. The smaller model is mounted on rubber tires and has four speeds forward up to 19 mph with two reverse speeds.

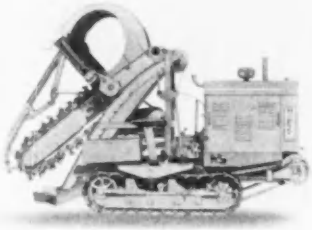
It is equipped with air-synchronized, multiple-disc clutches. Steering is accomplished by controlling wheels on

each side through the use of air-actuated multiple-disc clutches and brakes. The bowl is cable-controlled and is operated through an electric motor and gear reduction box. Overall specifications are: wheelbase, 5 ft. 11⅝ in.; length, 15 ft. 2 in.; height, 8 ft. 1 in.; width of blade, 11 ft. 3 in.; height of bowl, 36 inches, height blade can be raised above ground 44 inches. Attachments available for Super D are snow plow, root rake, side boom crane, Tournaskidder (overhead winch to facilitate dragging of logs, beams, forms, etc.), single and double drum power control unit, and drawbar for cable-operated scrapers.

Ditching Machine

Manufacturer: Findlay Division of Gar Wood Industries, Inc., Findlay, Ohio.

Claims: Buckeye model 402 service utility ditcher has a maximum depth of four feet and maximum cutting width of eight inches. It was designed to be



used for house service connections, telephone lines, gas, water or electrical lines, railway signal cable, foundation footings and other miscellaneous ditching jobs. Powered by a 47-hp at 1,600 rpm gasoline engine, it has a top digging speed of 1,308 feet per hour. Mounted on crawlers provided with a spring release to prevent damage, this ditcher can work on hillsides or with one crawler in the gutter and the other in the parkway.

The heavy duty boom is of two-piece box type construction. An 18x48-in. conveyor provides ample capacity to deposit the spoil on either side of the ditch. A telescoping shoe post automatically retracts when stabbing holes and employs a means for a quick reset to the digging position. The boom is lowered and raised by means of a self-locking worm hoist which lends itself to positive boom control. The hoist is powered directly from engine transmission by means of a high speed roller chain and sprocket.

Portable Cement Batcher

Manufacturer: Shovel Supply Co., Box 1369, Dallas, Tex.

Claims: The Ferguson cement batcher has capacity for a dual-drum paver—up to 12 cu. ft. per batch—and will handle bulk cement either at the freight car or on the job. Accurate scales and controls on the Ferguson batcher are located for operation by one man. Entire apparatus is water-tight and bin can be locked. Power is provided by 16-hp. 4-cylinder engine, complete with totally enclosed gear reduction, clutch and 4-speed transmission.

The Ferguson batcher can be set up for work in five minutes by rotating elevator around center pin into working position, then retracing wheels mechanically and setting up ramps for loading truck. When used at freight car, ramps are not needed; intake bin is placed at proper height for receiving bulk cement from box car by means of front dump tractor or hand unloading.

Batcher can be ready to move in two minutes. Unloading ramp forms

gooseneck for attaching to fifth wheel of truck, or batcher can be towed behind ordinary dump truck. Overall height in trailing position is 12½ feet.

Trench Hoe

Manufacturer: Harnischfeger Corp., Milwaukee 14, Wis.

Claims: Hoe attachment for the model 255A excavator has a power operated auxiliary gantry for raising and lowering new-style gooseneck boom. The new design permits greater digging reach and digging depth and greater dumping height. Operating speed is increased by 2-part hoist line. Machine can cut a vertical end at start of trench and also trim vertical walls. Special hoe stick linkage gives chopping action.

Ball Bearing Swivels

Manufacturer: General Machine & Welding Works, Pomona, Calif.

Claims: A strengthened and more complete line of Miller swivels consists of 15 different types of end connections and nine swivel capacities ranging from the "AA" Model rated at 250 pounds working load to the "H" Model at 46,200 pounds working. Swivels turn freely under maximum stress, removing the kink and twist usually present when a wire line is heavily loaded.

These angular thrust swivels are used for lifting concrete buckets, demolition balls, and other types of single line hoisting. They are also used in connection with traveling blocks and with the kelly bar on a drilling rig. Illustrated catalog is available from manufacturer.

Wire Rope Splicer

Manufacturer: Quay Industries, Washington 6, D. C.

Claims: Jacoel wire rope splicing machines weigh considerably less than the standard riggers vise, require only two men for an operation that normally needs three or four. Splicers are equipped with resistance regulators which aid them in overcoming cable torque. No. 1 handles rope $\frac{3}{16}$ to $\frac{3}{8}$ inches and the No. 9 takes ⅛ to 1¾ inches. Larger capacities can be supplied on special order.

Diesel Generators

Manufacturer: Murphy Diesel Co., Milwaukee 14, Wis.

Claims: Diesel-electric generator sets from 60 to 135-kw are engineered as complete integral units and permanently aligned at the factory. The units are suited for parallel operation of two or more sets with manual or automatic switches. Loads can be equalized or switched as required. Installation can be either portable or stationary since engine and generator are mounted on a single skid or frame. Portable units are customarily radiator cooled although the sets are supplied for either radiator or heat exchange cooling.

Sudden load changes are accommodated instantaneously by a micro-control hydraulic governor which maintains desired frequency and voltage. Voltage is accurately controlled by a rapid acting voltage regulator. More information is available in bulletin 106 from the manufacturer.

Diesel Truck Engines

Manufacturer: Buda Co., Harvey, Ill.

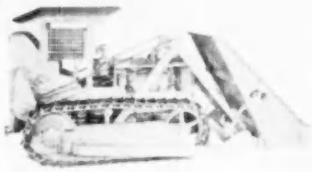
Claims: Models 6DAS-844 supercharged, 280-hp diesel; 6DA-844, 215-hp diesel; and 6DA-779, 185-hp diesel are 6-cylinder engines with practically the same mounting dimensions and are built on the same 161 Series production line. The displacement of these Dyna-Diesel engines is 844 and 779 cu. in. respectively. All three engines have the same bore of 5¼ inches. The stroke of the 844 engines is 6½ inches, the stroke of the 779 engine is 6 inches. A large number of engine parts such as intake manifolds, compressor brackets, oil cooler housing, gear housing and covers, etc., are made of aluminum to reduce the total weight of the engine.

Also available is model 6-DTS-468, a 152-hp 6-cylinder engine with maximum torque of 370 lbs.-ft. at 1,600 rpm. Bore is 4½ inches, stroke 5½ inches and piston displacement of 468.3 cu. in. This diesel is a compact unit—47½x29½ inches—and weighs only 1,418 pounds.

Under-Car Unloader

Manufacturer: George Haiss Mfg. Co., Inc., NYC 51

Claims: Combination belt and positive chain drive hopper bottom car unloader handles sand, gravel, crushed stone and any material loaded in hopper bottom cars. Capacity is up to three tons per minute. Complete information can be obtained by writing for bulletin 501 from the manufacturer.



Overshot Loader

Manufacturer: John Austin, Inc., Denver, Colo.

Claims: Model 4-C loader has a rated capacity of one cu. yd. and a 20-second loading cycle. It will handle bank-run material at a rate of 125 yards per hour on a 50-minute hour with no increase in fuel consumption over normal dozing operations. The overshot action, which eliminates swinging and blocking, is powered by a Caterpillar model 24 cable control unit driving a single cable through a wrap-around series of sheaves. The result is even tension at both sides, maximum power at the start of the loading cycle, and maximum speed for the balance of the cycle.

The 4-C loader is made in two heights, for surface operation and for underground mining. The standard machine for surface operation has an overall height of 15 ft. 3 in. with bucket raised, and a dumping clearance of eight feet. For underground mining it has an overall height of 12 feet, bucket raised, and a dumping clearance of six feet. Both units have adequate clearance for highway transportation and low underpasses. The loader is readily attached to utility size tractors including Caterpillar D-4, Allis-Chalmers HD-5 and International TD-9.

Cutting Electrode

Manufacturer: All-State Welding Alloys Co., Inc., White Plains, N. Y.

Claims: Electrode cuts, pierces, gouges, chamfers or removes welds without the use of oxygen or special equipment. Field tests on different metals have indicated its selection particularly on such difficult metals to cut as cast iron, nickel and stainless steel. Its performance on these metals, without oxygen, is definitely better than results experienced in arc cutting with oxygen. It also has proved superior for cutting iron, steel, aluminum, copper, copper alloys, and nickel alloys. Grease-impregnated cast iron

can be prepared for welding with this electrode.

Large Scraper

Manufacturer: Wooldridge Manufacturing Co., Sunnyvale, Calif.

Claims: With capacities of 17 cu. yds. struck and 20 cu. yds. heaped, the model TC-170 tractor-drawn scraper has been designed for the large scraper field. New curved ejector and 65-in. apron opening speed discharge of all types of loads. Three-piece cutting edge, together with principles of rear-draft fulcrum leverage and boiling bowl loading are said to greatly increase loading speed. Increased ground clearance aids maneuverability, and new cable arrangement adds to stability, ease of control, and cable life.

Dump Trailer

Manufacturer: Omaha Standard Co., Council Bluffs, Iowa

Claims: Trailer is for spreading, stockpiling, windrowing or dumping rock, gravel, dirt, or any similar bulk material. An adjustable latch mechanism, mounted in protected position on the side of the body, allows the operator to pre-set the opening of the dump doors from 4 to 36 inches, to provide an even, metered flow of material.

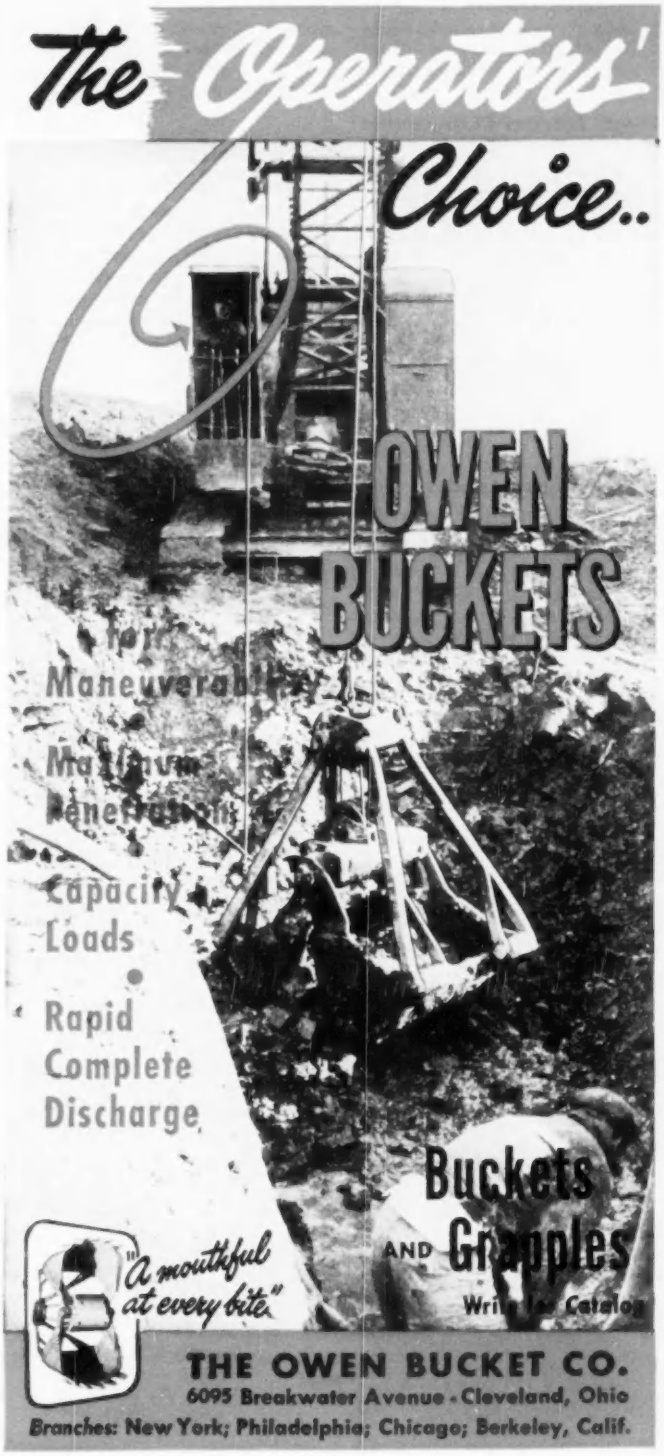
The latch can be adjusted with the doors open or closed. Hopper bottoms are especially designed for efficient handling of the materials specified by the purchaser. Main frame members pass outside the hopper, leaving it clear of obstructions and interior bracing, preventing tendency of the load to bridge or clog. Body side walls are braced with bridge-type trusses of angle iron and run the full length of the trailer to provide maximum strength and rigidity with light weight and low center of gravity.

Tailgate Loader

Manufacturer: National Lift Co., Waukesha, Wis.

Claims: A hydraulically-powered tailgate, called the Lift-O-Matic, can easily be installed on most pickup trucks. Its lifting capacity is 1,000 pounds. Hydraulic power is provided by a fan-belt driven hydraulic pump with its own self-contained clutch. The pump operates only when lifting power is needed.

The Lift-O-Matic is all steel constructed. When it is not being used to load or unload the truck, it can be level-locked at the truck body floor level, or it can be swung up and securely locked, acting as a regular tail-



gate. A safety by-pass valve in the hydraulic pump prevents overloading and endangering the hydraulic system.

Rough Terrain Compressor

Manufacturer: Worthington Pump and Machinery Corp., Harrison, N. J.

Claims: Special 500-ft. pipe line model Blue Brute portable air compressor with a standard engine and compressor unit is designed to operate in rough terrain and on unusually steep inclines. It is built to give continuous performance under the unfavorable dusty conditions encountered in pipe line construction. The unit is equipped with a special oil bath air cleaner, a steep angle oil sump, and a readily accessible heavy-duty replaceable cartridge oil filter.

Primary Feeder

Manufacturer: Pioneer Engineering Works, Minneapolis 13, Minn.

Claims: Now available in a 72-in. width and in lengths up to 60 feet is the Pioneer-Oro Jumbo feeder. Feeder pans, and all other wearing parts such as drive sprocket and supporting rollers are cast manganese steel. Features include interlocking support points on the pans proper, and clean out wedges in pans links to remove dirt on the return side. Drive links are cast integral with pan to eliminate bolts and rivets. Corrugated and overlapping, pans are spaced at 15-in. pitch.

"Highball" Clearing

Continued from page 35

match sticks as are dead snags and many smaller trees. Some of these latter, being flexible, are only bent over without breaking. However, in bending them, the cable scrapes the bark from one side, resulting in quick bleeding. They die soon and then are easy to stack and burn. This work is done by following teams of bulldozers with brush blades.

Trisdale uses Caterpillar D8 tractors with Hyster winches for this work. Wixson's Allis-Chalmers HD-19 tractors mount Carco winches. Cables are of 1¼-in. wire rope. Swivels and jewels are used to attach ropes to balls to cut down twisting and tangling. The amount of cable varies from 300 to as much as 1,000 feet, depending on the equipment and terrain.

Effectiveness of the balls in increasing the efficiency and speed of clearing operation has surpassed the most optimistic estimates of the contractors. Not only do they accomplish their primary purpose—elimination of cable hang-ups on stumps—but the additional leverage applied four to five feet above the ground has speeded up the work amazingly.

On fairly level ground under favorable conditions, one pair of tractors snagged all trees out of a 200-acre plot in four hours. Average daily production under all conditions including steep hillsides, marshy ground, etc., has been close to 100 acres snagged per 8-hour shift per pair of tractors.

There's a good safety argument, too, which weighs heavily in favor of the highball method. By using tractors and winches properly, operators can always stay well clear of the area in which trees are falling.

Marketable timber in the 22,500-acre reservoir area is being logged and cut into ties and lumber. At present the contractors employ 32 men on their joint contract; S. L. "Red" Wixson has 60 to 70 men on his new job ($2,446,850 for 6,840 acres) and John Trisdale employs 95 to 100 on his firm's latest job ($2,484,360 for 7,855 acres).

According to the Bureau of Reclamation, the speed of the new clearing

method will insure partial completion of the clearing job in time to permit storage of 1,000,000 acre-feet of water in the Hungry Horse reservoir during the spring run-off of 1952. This storage is essential to spin the first two generators which are scheduled to begin producing power in October and December, 1952, to help relieve power shortages in the Pacific Northwest.

Just another example of American ingenuity cutting costs, time, and accidents under a competitive free enterprise system—best the world has ever known.

Wire Rope

Continued from page 38

with a lubricant. Often, rope is damaged by poor handling; kinks, twists, and untwisting are the result. These conditions are likely to occur when rope is unwound from the reel. If you have any questions about unspooling, I'm always ready to help.

Re-socketing at regular intervals is another thing to keep in mind. Some of you have probably seen ropes with high or drawn strands. Well, improper socketing may cause this condition because the strain is not applied evenly to all the strands of the rope. Rope vibrations which end at the socket also may cause high or drawn strands.

Run In at No Load

Before you cut rope, be sure both sides of the cut are securely bound or whipped with steel wire. And, before I forget, whenever we install new rope, it should be run without load so that the rope becomes "set" before a strain is placed on it. Needless to say, high strands greatly shorten the life of the rope.

Crushing a rope is easy. It can be done by improper clamping, dropping a reel, using a pry bar against the rope, running over it or pulling it against sharp edges. But, it's also easy to practice care in handling, and the use of pads on the corners of sling loads will eliminate much rope damage.

Defective parts are hard on rope, too. Deformed or damaged hooks, shackles, rings, pad eyes, drums, sheaves, or pulleys with cracked hubs or flanges should be removed.

If the grooves of a sheave, for example, are rough or too large or too small in diameter for the line, the rope will wear excessively. For ¼-in. to 1¼-in. ropes, the diameter of the groove should be 1/16 inch greater than the diameter of the rope. For ropes larger than 1¼ inch, the diameter of the groove should be ⅛ inch greater than the diameter of the rope.

Save That Arm

We're all more or less familiar with the fellow who grabs a pinch bar and uses it as a pry to spool a loaded line onto a power-driven drum. He not only ruins the wire rope but is also likely to ruin himself. So far as I know, even the best doctors have not been able to devise a method by which an arm pulled off at the shoulder can be stuck back on.

Well, that finishes things up for today, boys. I hope you'll remember the pointers I gave you.

(This talk is adapted from "Safety Talks for Construction and Maintenance Foremen," published by the National Safety Council, Chicago. The next talk in the series will be "Tractors Change But Accidents Don't."—The Editors.)

News from the Field

Dredging the Duwamish — It's 541,000 Cu. Yd. Job

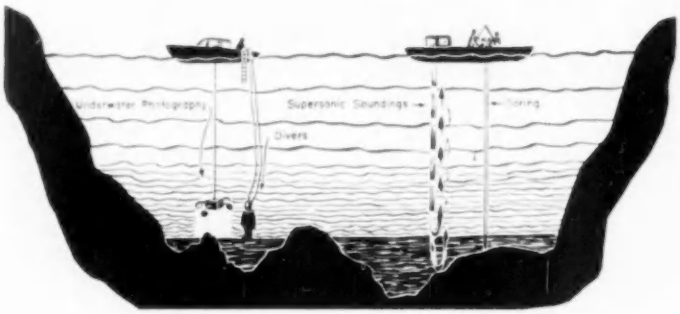
The Corps of Engineers is using the 15-in. hydraulic dredge "Alamitos" to suck 541,000 cu. yd. of silt from the mouth of the Duwamish River where it empties into Puget Sound at Seattle, Wash. The channel is to be finished 200 feet wide and 30 feet deep from the mouth to the 1st Ave. S. bridge. From there to the 14th Ave. S. bridge, it will finish to 150 feet wide and 20 feet deep. The remaining mile to the Duwamish turning basin will be 150 by 15 feet.

Silt is delivered through a 1,500-ft. floating line to sub-level lots along the river banks. Areas are first diked by a dragline then the fill started inland and the delivery pipe worked back to the river bank. Fills average six feet deep.

Although property owners seem to be glad to have their lots filled for free, Engineer-in-Charge, H. W. Zirckel is concerned about finding new dump areas as the dredge spuds its way up the river. Dredge Super Don Bell reports considerable trouble with debris, mostly old tires, which jams the main pump sometimes two or three times a shift. Workmen feel better about taking the pump apart, he says, when they recover good salmon fishing gear—some of it in pretty good shape.

• Right: Assistant Secretary of the Interior, W. E. Warne (far right) watches aboard Navy barge as free fall sampler is connected to weight assembly for sedimentation test.

• Cross-section diagram indicates various methods used to check silt deposits in Lake Mead.



Reservoirs Promise Long Life Despite Sedimentation

Hoover Dam has a useful life of at least 275 years regardless of river-carried silt deposits, according to Secretary of the Interior Oscar L. Chapman in reporting results of recent studies. He adds, however, that silt washed down from eroding mountains, grazing lands, forests, and farms is a menace which should be met with sound, vigorous watershed conservation measures.

This new information comes from recent investigations at Lake Mead—the large artificial lake behind Hoover Dam—by the U. S. Geological Survey and the Navy Department for the Bureau of Reclamation. Wartime techniques developed to locate submarines and sunken ships were used to chart the lake floor.

Results show that silt has been deposited in the reservoir at an annual rate of 105,500 acre-feet since water storage started in 1935. Measurements establish deposits approximately as the Bureau calculated before it built the dam, reports Mr. Chapman. Lake Mead now has an actual storage capacity of 29.8 million acre-feet compared with the original capacity in 1935 of 31.1 million acre-feet.

At the present rate, Bureau technicians estimate it would take until the year 2225 for this "world's largest artificial reservoir" to fill up with silt. Expected compaction would extend this date to the year 2380. However, even that deadline will never come in the foreseeable future, says Mr. Chapman, because dams still to be built upstream from Lake Mead will virtually stop its siltation.

Guernsey reservoir on the North Platte River in Wyoming has the highest rate of siltation of any Federal Reclamation installation. Although 33% of its capacity has been lost in 20 years, this rate is expected to be slowed to less than 1% per year by construction of Glenco Dam upstream. Elephant Butte Dam on the Rio Grande in southern New Mexico has lost 16½% of its capacity in 32 years.

• 15-in. hydraulic dredge "Alamitos" works in the mouth of the Duwamish River at Seattle, Wash. to deepen channel to 30 feet. Silt is pumped to river-edge lots (below) which are first diked by dragline. Men patrol dikes constantly to watch for leaks.

Designs Dozer Blade

Alfred Teufel, excavating contractor Portland, Ore., has invented an unusual dozer blade which successfully passed initial tests and is now being patented.

Teufel had considerable need of a multi-purpose blade for such jobs as building excavations and clearing on farms — small jobs on which only one dozer is usually needed but where a clearing blade, a large mucking moldboard and an ordinary blade are often

• After running tractor up mound of earth to elevate front end, detachable moldboard (above) is removed and blade is swung like a propeller (below) to put teeth in grubbing position.

required. He found nothing he considered suitable on the market; therefore he has tested and experimented over several years with this blade the result.

To put the clearing teeth in play the dozer operator pushes up a small pile of earth with his blade and then runs the tractor up on this pile to elevate its front end. Releasing two sidebar pins he then twirls the blade by hand

big FEATURES IN MINIATURE

..right on your own desk

Literature describing remarkable features of the new ROGERS Power-Lift Detachable Gooseneck Trailer will be sent upon your request: but—more than that—any Rogers Dealer will demonstrate its features, right on your own desk with an *operating scale model.*

Contact him—see how easily it detaches—how the deck can be raised or lowered to avoid unloading and detouring under certain conditions—how disabled, non-powered equipment can be loaded easily—how the design provides giant tires for extra heavy and profitable payloads.

To buy a trailer without seeing this Rogers unit would be like going to the circus without seeing the elephant. Don't do it.

Developed by The Trailer Pioneers

ROGERS BROS. CORP. ALBION PENNA.

136 ORCHARD STREET

Export Office: 50 Church St., N. Y. 7, N. Y. Cable Address: "Brosflex"

(like a propeller) to place the clearing teeth on the bottom.

Teufel says he has been using the new blade on his own projects for almost a year with gratifying results.

Auger Drilling Iron Ore

At the Mary Ellen Mine in the Minnesota iron range a coal auger has replaced churn drills with several advantages, according to H. F. Manseau, superintendent for Stanley Mining Co. Lower cost per foot of hole drilled and fewer holes and less powder required are among advantages claimed. Drilling and blasting costs less than five cents per ton.

An unconsolidated overburden of glacial drift from 18 to 35 feet in depth is first removed by a Lima 1201 loading 15-ton Euclid trucks exposing a hard rock capping of algal taconite. This material goes to 15 feet and is very resistant to normal methods of drilling. The Mary Ellen formation is from 40 to 70 feet in depth and rests on a layer of worthless taconite slate. Layers of ore are separated by a soft seamy material.

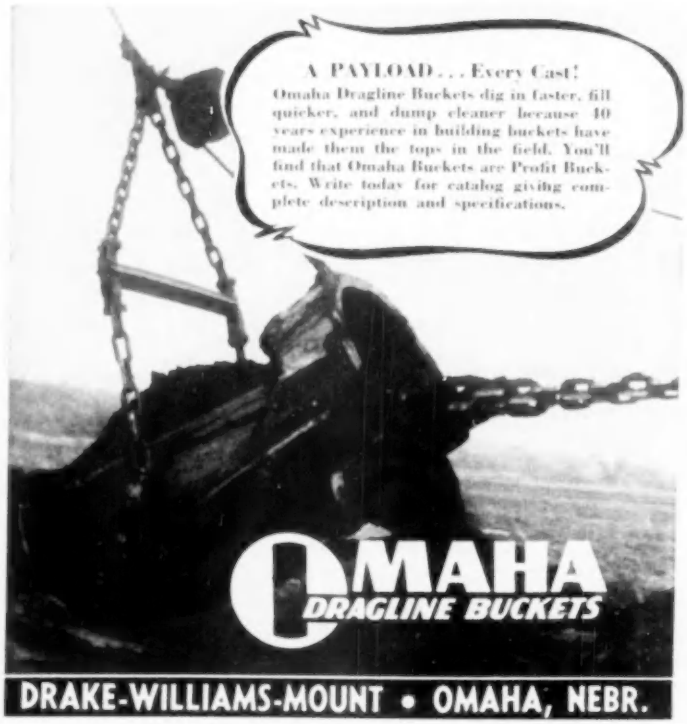
By following along the toe of the bank, holes are bored into the softer material and the entire bank is blasted upwards. The rock capping breaks into large blocks and is sorted from the ore by the loading shovel.

• McCarthy rock borers sink 6-in. augers into ore bank at a slight downward angle. Four 5-in. screw jacks anchor machine while drilling. Front wheels are demountable.

On a bench 30 to 35 feet high, a series of 40-ft. holes spaced on 21-in. centers are drilled at a slight downward angle with two McCarthy rock boring machines using 6-in. coal augers and Kennametal 6½-in., three pronged auger bits with carbide insert tips.

Three hundred pounds of Hercules gelamite D in 5x24-in. sticks is loaded to each hole and fired with Primacord and an electric cap. An overbreak of 10 to 20 feet is obtained to give a blasting factor of 0.4 lbs. of powder per ton of material. No secondary blasting is necessary.

Drills average 240 feet per 8-hour shift and as much as 320 feet has been drilled in one shift.



Cultivation

Continued from page 23

To get maximum efficiency the bowl is kept loaded with from one to three cu. yd. of dirt. Shipp uses one of the TD-14's or the TD-18 to plane an average 20 acres per shift.

Average life of crawler tractors in contract tillage is from three to five years. During that time Shipp will install new motors, new rollers and rails, and make necessary general repairs every 4,000 to 6,000 tractor hours. Accurate hourly records are kept for both customer reference and operating control. Each tractor is equipped with a time clock, mounted inside the tool box, which operates only when the tractor is moving. The clock is wound at the start of each shift and its entire mechanism is locked shut. Most scraper work is on a yardage basis, but where it is not the charge is $8.00 an hour.

Operating Costs

Operating costs in the field break down to $1.00 an hour for the operator; fuel and oils, $1.00 to $1.50 per hour, and depreciation charges $1.00 to $1.55 an hour depending on the size

of the tractor. Because of the high efficiency in his contract work, Shipp's crawlers pay for themselves operating six months out of the year—a high percentage on round the clock operation. Shipp's standard charges are:

Hourly or Acre Fees

Scraper work—$8.00 per hour or 12 to 18 cents per yard (on contract).

Subsoiling—$4.00 per acre up depending on gear.

Landplaning—$2.25 per acre

Disc plowing—$3.00 per acre depending on gear.

Discing—$1.50 per acre

Floating—$1.50 per acre

Renovating—$2.25 per acre

Ford wheeled tractors—$4.00 per hour.

Favors Hardfacing

Much of Shipp's machinery repair is of a preventive type. For most repairing he depends on a Lincoln 210-amp electric welder and a Victor gas cutting torch mounted on a small two wheeled trailer which carries a small air compressor and tank. Much of the arc welding is hard facing. Three-ft. subsoiler shanks which would last from three to four hours in cases of severe abrasion will last days when properly hardfaced.

Points can be hardfaced in 20 minutes using less than $1.00 worth of rod on a shank costing $5.00. The life of renovator tool blades costing $1.25 each can be at least tripled with 50 cents worth of time and hard facing material.

Originally a Road Man

After a stint at road building for the Department of the Interior, Shipp planned to go into road construction. Instead he got side-tracked into straight tillage work eight years ago and found an interesting job of pioneering in a new and growing field. Now when a new customer calls Shipp Shape Tillage and asks if he is talking to Mr. Shipp or Mr. Shape, Vernon replies, "I'm Shipp, my wife is Shape." And Mrs. Shipp is usually right in the office keeping the books in shape.

While large scale contract tillage is still fairly new, Shipp believes it is a business with great expansive possibilities. Where it is available even the smallest landowner can make use of modern tillage service by a specialist to increase the workable area and value of his farm.

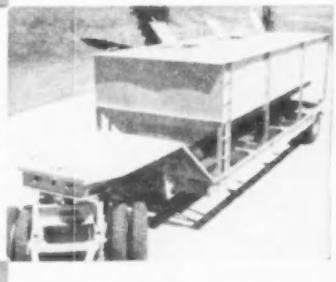
What's *Your* hauling problem?

Moving Motor Graders?

To speed hauling of motor graders within 50 to 100-mile radius, La Crosse developed this 19-ton tandem axle trailer, with special ramp for loading grader steering wheels on trailer gooseneck. Trailer idea cuts grader travel time 50% . . . saves wear on graders.

Bulk Materials?

This special La Crosse-engineered "bin trailer" eliminated high labor cost for bagging and unbagging corn starch . . . cut delivery time 90% from processing mill to finishing plant 2 miles away. Tapered La Crosse bin is equipped with worm gear unloader at bottom.



Work or Pleasure Boats?

Featuring low height and special "hull-tailored" saddles, this custom-built La Crosse trailer cut the cost of hauling a 13-ton Chris Craft over 50% per trip. It also simplifies loading and unloading . . . insures a safer ride without damage to structure or finish of boat.

Capacities 8 to 67 tons—single, dual or tandem axle

Check Today!

LA CROSSE TRAILER CORPORATION, La Crosse, Wis.

☐ Show me how La Crosse trailers can help reduce my cost of moving .....
(Equipment or Material)

Average load: ..... tons; ..... ft. long
..... ft. wide ..... ft. high.

Name .....

Occupation or business .....

Address .....

City ..... State .....

LaCROSSE

America's Favorite LOW BED TRAILER

NOT in the *Contract*

Pants are made for men and not for women. Women are made for men and not for pants. When a man pants for a woman and a woman pants for a man, they are a pair of pants. Such pants do not always last and then they are called breeches of promise. This often turns into a suit. When two couples are mixed up in the suit, all panting, it is a suit with two pair of pants!

Patient—"Doctor, I blush so easily that it worries me. When I sit down and think, I blush. How can I stop it?"

Psychologist—"The best way, young lady, is to think about something different."

Grade Foreman: "How do you spend your income?"

Catskinner: "About 30 per cent for shelter, 30 per cent for clothing, 40 per cent for food, and 20 per cent for amusement."

Grade Foreman: "But that adds up to 120 per cent."

Catskinner: "No wonder I'm always broke before pay day!"

The man from the Bronx was wandering on the Sahara Desert, clad only in his shorts, when he met an Arab astride a camel.

"Where," asked the Arab, "might you be going?"

"For a swim," responded the Bronxite.

"A swim effendi?" was the astonished reply. "Why, the ocean is 800 miles from here."

The man from the Bronx blinked. "Eight hunnert miles! Wow! Is dis a beach!"

"I want to know once and for all," the irritated contractor shouted, "who is boss in this house?"

"You will be much happier," his wife replied, "if you don't try to find out."

A tourist, passing through a small town at noon asked a man on the street where he could get the best meal in town.

"Right down that side street, third house," the man replied. "But it's wash day, and I don't dare invite you home for lunch."

"Mondays, on the other hand, are very dull."

A powderman was proposing to his best girl. "And, sweetheart," he finished, "I'll lay my whole fortune at your feet."

"It isn't a very big fortune," she reminded him.

"I know, dear," he replied, "but it will look awfully big beside your little feet."

He got the girl.

A Long Island potato married an Idaho potato and eventually they had a little sweet potato. The little one flourished, and in due time, announced that she wanted to marry Gabriel Heatter.

"But you can't marry Gabriel Heatter," declared the parents. He's just a commentator!"

Junior: "Dad, why is our negro cook black?"

Dad: "That's nature's way, my boy."

Junior: "Is she black all over?"

Dad: "Yes, she is."

Junior: (after thoughtful consideration): "You sure know everything, don't you Pop?"

Then there was the Scotchman who rode in a cab with his girl. She was so beautiful he could hardly keep his eyes on the meter.

Boss: "Shame on you. Do you know what we do with office boys who tell lies?"

Boy: "Yes, sir, when they get old enough the firm sends them out as salesmen."

The new doctor was the only one available in the mining town when Engineer Kelly's wife was taken ill. Called to the Kelly home, he went upstairs to the sick room but came down in a few minutes to inquire, "Have you a corkscrew handy?" Given the tool, he disappeared up the stairs for the second time.

Several minutes later the doctor was back. "Got a screw driver?" he asked the anxious Kelly. Instrument in hand, he went upstairs again.

Almost immediately he was downstairs again. "A chisel and mallet, quickly," he demanded. The distraught engineer could stand it no longer. "For the love of Heaven, doctor," he begged, "what's the matter with my wife?"

"Don't know yet," was the reply. "Can't get my medicine bag open."

✓ RUGGED CONSTRUCTION

✓ DEPENDABLE SERVICE

It's on the Record..

"EUCLIDS Haul More Loads At Less Cost!"

Take the word of men who have learned from experience—" 'Eucs' sure get the jobs done—and at lowest cost, too!" Engineered and built for heavy off-the-highway hauling service, "Eucs" are standard equipment in many leading open pit mining and quarry operations, and on construction and industrial work.

Owners depend on Euclids for staying power and continuous operation on jobs where schedules must be met . . . for low-cost production, long life and job profits.

The parts and service facilities of Euclid's world-wide distributor organization assure prompt, efficient service to Euclid owners everywhere. Consult your Euclid Distributor today for complete information on the Euclid line for off-the-highway hauling work.

The EUCLID ROAD MACHINERY Co., Cleveland 17, Ohio

CABLE ADDRESS, YUKLID. CODE: BENTLEY

EUCLIDS *Move the Earth*

Notes from the manufacturers

Broderick & Bascom Rope Co., St. Louis, Mo., has elected Charles E. Bascom as president of the company and Joseph H. Bascom has been elected first vice president and secretary-treasurer. These officers and J. F. Hedding of Pittsburgh constitute the board of directors.

Gar Wood Industries, Inc., Wayne, Mich., announced recently the purchase of the National Truck Equipment Co., Waukesha, Wis. This property will be owned and operated by a newly formed and wholly owned subsidiary of Gar Wood, to be known as the National Lift Co. Manufacture of products will be continued by the National Lift Co. in the former National Truck Equipment plant at Waukesha.

The Baker Manufacturing Co., Springfield, Ill., is constructing a new $150,000 brick and steel building, to contain approximately 10,000 sq. ft. of floor space, which will provide additional assembly space and will be equipped with 10-ton overhead cranes to facilitate handling of a new, heavier line of equipment. With this expansion, capacity of the plant will be more than doubled. Expansion of the Baker manufacturing facilities is in line with recently announced additions by the Allis-Chalmers Co., Milwaukee, Wis.

International Harvester Co., Chicago 1, announces the appointment of L. J. Lange, industrial power product specialist. His duties will be concerned with the design and sale of industrial wheel and crawler tractors and power units. Mr. Lange succeeds S. L. Siegfried in this capacity. Mr. Lange joined the company in 1936 with the gas engineering department on field testing and tractor development. He was service engineer on the territory for industrial power products from January, 1947, until last November.

General Electric Co., Schenectady, N. Y., has opened a new service shop and warehouse in Salt Lake City for improving service to users of apparatus in the Rocky Mountain area. Located at 301 South Seventh West St., these facilities will be used to service equipment for mines, smelters, power companies, and industrial concerns in Utah, Idaho, Montana, and Nevada. The building provides approximately 50% more warehouse space, and more than double the former capacity for service and repair of electrical apparatus.

Bucyrus-Erie Co., South Milwaukee, Wis., has appointed Bell-Lott Road Machinery Co., West Columbia, S. C., as distributor for Bucyrus-Erie general purpose excavators. Bell-Lott will sell and service the line of gasoline, diesel and single motor electric ¾ to 4-yd. excavators and the Hydrocrane throughout the state of South Carolina. Fourteen counties in Ohio were recently added to the territory in which Indiana Equipment Co., Inc., Indianapolis and Ft. Wayne, sells and services Bucyrus-Erie general purpose excavators. The counties—all in northwestern Ohio—are: Williams, Fulton, Lucas, Defiance, Henry, Wood, Paulding, Putnam, Hancock, Van Wert, Allen, Hardin, Mercer and Auglaize. In these counties, Indiana Equipment will handle Bucyrus-Erie gasoline, diesel and single motor electric ¾ to 4-yd. excavators as well as the Hydrocrane. Indiana Equipment will be represented in the Ohio territory by James R. Schultz.

The Euclid Road Machinery Co., Cleveland, Ohio, has announced the appointment of Alan S. McClimon as manager of sales development. Prior to joining Euclid as a special representative, McClimon was associated with Mack Trucks Inc. as a special representative for off-highway truck sales. In his new position he will supervise the activities of Euclid field engineers and will assist Euclid distributors and owners with operating data, special designs and applications of Euclid equipment and the development of new markets and models. Also announced is the appointment of R. M. Brown as district manager covering Ohio, western Pennsylvania, Indiana, Michigan and Kentucky. Mr. Brown has been with Euclid for 15 years, most recently as manager of the sales development dept. and replaces V. L. Wheeler who has resigned.

American Manganese Steel Div. of American Brake Shoe Co., NYC, reports the death of Bradley S. Carr, May 15, 1950. Mr. Carr joined American Manganese Steel in 1917, was with dredge pump sales for many years, and was sales manager

MORE YARDAGE
LESS LABOR
LARGER PROFITS

with a

SAUERMAN
SLACKLINE
CABLEWAY

Sauerman Slackline Cableway pictured above digs gravel from lake and keeps screening plant supplied with 75 cu. yd. an hour at cost of only a few cents per yard. The Sauerman machine digs, lifts, conveys and dumps in a steady, rapid cycle and one man handles the entire operation.

• For digging in ponds, rivers, deep pits, and conveying to a high hopper, bin or pile, Sauerman Slackline Cableways are the fastest, most efficient equipment. Typical of the service given by these machines is the case of an eastern gravel producer who has operated the same Sauerman Slackline Cableway for over twenty years, handling some two million cubic yards, with a very small outlay for maintenance. If you want a one-man machine that will reach far, dig deep, lift and carry in the same operation, get a Sauerman Slackline Cableway.

For complete details, write for Catalog 19-C.

SAUERMAN BROS., INC.

574 S. Clinton St. **Chicago 7, Ill.**

of that department at the time of his death. Perry I. Nagle has been appointed to fill the vacancy created by Mr. Carr's death. Mr. Nagle will act as sales manager for both industrial and dredge pumps.

Marlow Pumps, Ridgewood, N. J., announces the appointment of J. B. Diepenbrock as district sales representative for the west coast. Mr. Diepenbrock, formerly associated with Ingersoll-Rand and Dow Chemical, will take charge of Marlow construction pump sales in California, Oregon, Washington, Idaho, Nevada, Arizona, and Western Montana and Utah.

Service Supply Corp., Philadelphia, Pa., has opened a new service and sales branch at 234 N. Prince St., Lancaster, Pa. Service Supply in Lancaster will handle service, parts, sales and rentals of: P & H shovels, cranes, draglines, Jaeger compressors, pumps, mixers, road machinery, LaPlant Choate motor scrapers, scrapers, dozers, Thor air tools, Gradall earthmovers, Universal crushing, screening and loading equipment, Haiss loaders, buckets, Mandt swing loaders, Pettibone-Mulliken, buckets, and dippers, Brooks load luggers, Gar-Bro concrete equipment, Gerlinger carriers and fork trucks and Sicard sanivans and snowmasters. Sales for Service Supply in Lancaster are being handled by Bill McNichol.

Pressed Steel Car Co., Inc., Chicago, Ill., recently purchased the C. R. Jahn Co. of Savanna, Ill. Manufacturing operations will be moved to Pressed Steel Car's Mount Vernon, Ill., plant while the sales and executive offices will be located at 6 N. Michigan Ave. in Chicago. The name of the Jahn organization, which was established in 1932, has been changed to Jahn Trailer Div., Pressed Steel Car Co., Inc. C. R. Jahn will be manager of sales of the new company and his son, Herbert Jahn, will remain in charge of trailer design.

"You'd look tired, too, I hear he just laid a pipeline"

The Pettibone Mulliken Corp., Chicago, Ill., announces the acquisition of Hammermills, Inc., St. Louis, Mo., as a wholly-owned subsidiary corporation. C. M. Bindner, president and T. A. Oberhellmann, vice-president and chief engineer of Hammermills, Inc., will continue in the same capacity. Headquarters for Hammermills, Inc., have been moved from St. Louis to the main office and factory of Pettibone Mulliken Corp. at 4700 West Division St., Chicago, Ill.

General Tire & Rubber Co., Akron, Ohio, has promoted James A. Smith to sales representative in north-central Ohio with headquarters in Mansfield. He replaces Harvey Bailey, who has resigned to become the General Tire distributor in Mansfield.

Baer Steel Products, Inc., Auburn and Renton, Wash., announces the appointment of Manford R. Lillengreen as sales manager. Mr. Lillengreen will maintain close contact with contractors in all parts of the U. S. In addition, he will franchise new dealers to serve the firm's national market. For many years Lillengreen has been with the H and L Tooth Co. as manager of the Portland, Ore., branch and later in dealer organization work throughout the nation.

Eutectic Welding Alloys Corp., NYC, announces a series of field force promotions headed by the appointment of Don Rasmussen as western sales supervisor. Other advances announced were: Herman Greif and Daniel Wetmore to regional managers; Hugh Hurley and Roy Waldrop to assistant regional managers; Don Garrett, Lee Wade, and Alex Frederick to district managers.

Goodyear Tire & Rubber Co., Akron, Ohio, has appointed C. A. Hulsemann manager of industrial brake sales department, aviation products div. Mr. Hulsemann joined Goodyear in 1938 as a salesman in Cincinnati, Ohio. He was moved to Akron in 1940 and placed in charge of contacts with the light plane industry. He was named senior sales engineer of the aviation products div. in 1945.

Tuffy® FAMILY SMASH HIT

in Construction Industry

Fathered by necessity, conceived in research—the distinguished Tuffy family of wire rope and braided wire fabric constructions have won the popular acclaim of users throughout the construction industry on the dollars and cents basis of better performance. By running your own comparative tests you, too, will be convinced that Tuffy gives you the ultimate low cost wire rope.

Put Tuffy Draglines to any test. Watch them come out on top with unequaled money-saving records. No more complicated specifications. Just the length, size and name Tuffy. That's all.

Test Tuffy's ability to handle extra yardage. You will change to Tuffy reels on your whole fleet. The name Tuffy, the diameter and the length—that's how simple it is to buy scraper rope for new yardage records.

An entirely different, patented, interlaced wire fabric construction gives Tuffy extraordinary flexibility and stamina. Proof tested to twice working load. Ten types—factory fitted.

union Wire Rope CORPORATION

2142 Manchester Ave. • Kansas City 3, Mo.

Send Folder On { Tuffy® ☐ DRAGLINES ☐ SLINGS ☐ SCRAPER ROPE

FIRM NAME _____

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CITY _____ STATE _____

New trade literature

Title: **Arc Welding Booklet**

Subject: *Arc Welding News*, an interesting booklet of photographs and articles on welding from all over the country, is now available. Contains features and stories of current jobs and tips from welders in the field. Many of the articles feature time and money saving applications.

Where to Get: Hobart Brothers Co., Troy, Ohio. (Free)

Title: **Drainage Pipe Folder**

Subject: Folder discusses continuous beam strength to support loads and resist impact, enabling metal structures to meet the job needs of highway, railway, airport, municipal and industrial service. Photographs and diagrams show that flexible metal underground structures can support heavy live and dead loads without failure. Beam strength, permitting the use of long lengths, and strength and durability of joints in both pipe and Multi Plate structures are also discussed. A listing of Armco drainage structures outlines the types suitable for various installations and kinds of service.

Where to Get: Armco Drainage and Metal Products, Inc., Middletown, Ohio. (Free)

Title: **As the Crow Flies**

Subject: All phases of pipe line construction—including trenching, rock drilling, blasting, welding, doping, wrapping, laying and backfilling—are pictured in a new construction film. All scenes were photographed in the Cumberland Mountains, between Green Brier and Oak Ridge, Tenn. Action shows construction work on the 172-mile, 22-in. natural gas line laid by Oman-Fulton-Brodie Co., of Nashville, Tenn., for the East Tennessee Natural Gas Co. A large part of the line runs through rock, and the movie includes a demonstration of the new rock drilling technique used successfully on this job. The approximate running time is 21 minutes for 750 feet of 16-mm. film, black and white, with sound track.

Where to Get: Interested groups contact Gardner-Denver Co., Quincy, Ill.

Title: **Industrial Hose**

Subject: Three-pocket portfolio contains the latest catalogs covering Weatherhead line of industrial hose and hose ends and tube fittings. Catalog H-1451 lists latest development of reusable steel hose ends and industrial hose for all hydraulic purposes, fuel and oil lines for diesel engines or for any other flexible hose requirements. Shows a range of working pressures up to 5,000 P.S.I. with burst pressures ranging up to 16,500 P.S.I. Catalog E-1457 is the latest edition of the patented Ermeto steel and stainless steel fittings. In addition to the listings carried in previous Ermeto catalogs, charts have been added which show dimensional specifications of the line for engineering layout purposes. Catalog F-1456 shows a complete line of brass inverted, S.A.E., compression, threaded sleeve type and pipe fittings. In addition to the regular line of brass fittings, this catalog

lists a line of 37° flared type steel fittings that conform to requirements of J.I.C. (Joint Industrial Conference) on hydraulic standards for industrial equipment. Dimensional charts for engineering layout purposes are also provided.

Where to Get: The Weatherhead Co., Cleveland 8, Ohio (Free)

Title: **Concrete Mixer**

Subject: Bulletin describes current models of Worthington-Ransome Blue Brute big concrete mixers used in central mixing plants, large construction jobs and public works projects. Four sizes are described: 28-S (1-yd. portable or stationary), 56-S (2-yd. stationary), 84-S (3-yd. stationary), and 126-S (4½-yd. stationary) models. The booklet illustrates how the big mixers, when installed in a central mixing plant, can be used in conjunction with truck mixers or agitators. Attachments and accessories, such as the hydraulic control system, are illustrated. Complete specifications and dimensions of the mixers are given.

Where to Get: Worthington Pump and Machinery Corp., Harrison, N. J., Bulletin B-1700-B2. (Free)

Title: **Welding Equipment**

Subject: Full design specifications are given for both EutecTorch No. 1, used for light and general work, and for EutecTorch No. 2, for heavier work. Distinctive features of these torches are listed and the uses to which they may be put — both torches are available with cutting attachment — are indicated. EutecArc, the AC welding machine, which is capable of handling both light and heavy work, is also covered in this folder. Part of the folder is devoted to a complete listing of additional accessories for gas and arc welding.

Where to Get: Eutectic Welding Alloys Corp., NYC 13. (Free)

Title: **International Trail**

Subject: Publication of magazine for truck transportation industry has been resumed with the May 1950, issue. The Trail, initiated in July 1927, was published without interruption through the January 1942, issue, or a few days after the United States entry into World War II. The publication, to be issued six times a year, is of business magazine size. It is designed primarily for truck fleet owners and leaders in the truck transportation field and will be mailed to owners of five or more trucks on lists supplied by International dealers and branches.

Where to Get: International Harvester Co., Chicago 1, Ill.

Title: **Rope Chart**

Subject: Rope reference chart gives specifications on manila, nylon and sisal ropes. This handy wall chart measuring 17x22 inches contains such data as rope diameter, circumference, approximate net weight of 100 feet, approximate gross weight full coils, breaking strength and working strength is included for sizes ranging from 3/16 to 3¾ inches in diameter. In addition, the chart lists the various New Bedford ropes, explains exclusive dispensing carton and pre-measured ropes.

Where to Get: New Bedford Cordage Co., New Bedford, Mass. (Free)

Title: **Electrical Connections**

Subject: Bulletin illustrates and describes standard line of molded neoprene rubber electrical connectors and associate equipment such as lamp sockets, distribution centers and vulcanizers. Items are illustrated, described in detail and complete specifications given.

Where to Get: Joy Manufacturing Co., Mines Equipment Div., Henry W. Oliver Bldg., Pittsburgh 22, Pa. (Free)

Title: **Wire Rope**

Subject: Contractors, construction companies, engineers and those who buy or specify wire rope for earth moving machinery, will find this bulletin helpful. It points out the advantages of using a particular rope for each job. Shows construction of various types of wire rope and complete specifications are given.

Where to Get: American Chain and Cable Co., American Cable Div., Wilkes-Barre, Pa. (Free)

Title: **Tractor Catalog**

Subject: Catalog features Allis-Chalmers' HD-19 crawler tractor with torque converter drive. Attention is given to several worthwhile track designs and the HD-19's A-frame design, welded box section, one-piece, all-steel steering clutch case, and final drive housing. One full page is

McCarthy

MOBILE-MOUNT VERTICAL DRILL FOR BLAST HOLE DRILLING

McCarthy Vertical Drills are compactly designed for truck, half-track or caterpillar mounting. They adapt to any job where soft rock formations are to be removed, and their tough, simplified construction means bigger profits through reduced drilling costs and increased drilling speeds.

McCarthy Drills are equipped with plenty of power and finger-tip controls. They're easy to set up and easy to move about.

See your McCarthy Dealer today or write us direct for complete information. Our 48 years of experience can mean vastly increased profits for you.

Makers of Drilling Equipment Since 1901

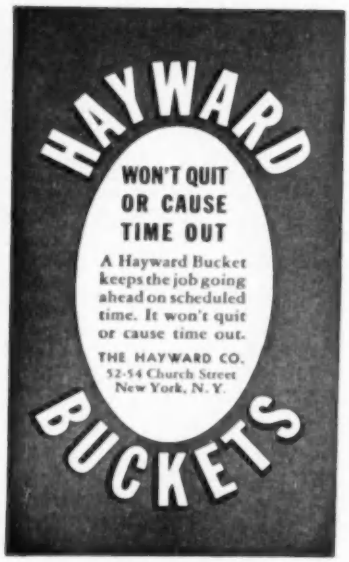
SALEM

THE SALEM TOOL CO.

773 SOUTH ELLSWORTH AVE.
SALEM, OHIO, U. S. A.

devoted to operators and servicemen on finger-tip steering, self-energizing brakes, and other built-in conveniences. Cutaway views and specifications on GM's two-cycle diesel engine provide a general description of the tractor's power plant. A two-page spread introduces the full line of allied equipment, another page is devoted exclusively to special accessories and a full list of tractor specifications is given.

Where to Get: Allis-Chalmers Manufacturing Co., Tractor Div., Box 512, Milwaukee 1, Wis. (Free)



Title: **Boulder Canyon Project**

Subject: Valuable engineering lessons learned the hard way in the construction of Hoover Dam on the Colorado River have just been published in book form. The problems and technical advancements in the building of the structure and power plant are described in a series of 23 Bureau bulletins covering various technical phases of the project. Cloth-bound sets of the bulletins cost $44.85; sets bound in paper, $29. Prices of the individual bulletins range from $.50 to $3, as shown on lists furnished upon request.

Where to Get: Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., or the Bureau of Reclamation, Denver Federal Center, Denver, Colo., Attention 841.

Title: **Hard Facing Manual**

Subject: Booklet describes how to select the right alloy; which welding process to use; and gives simple, step-by-step instructions for applying the various rods by both the oxy-acetylene and metallic-arc welding processes. Information is given on the properties and available sizes of 12 Haynes hard-facing materials. The booklet should prove to be a helpful guide for manufacturers and users of metal parts, welding engineers, master mechanics, maintenance superintendents, and plant foremen.

Where to Get: Haynes Stellite Division, Union Carbide and Carbon Corp., Kokomo, Indiana. (Free)

Title: **Steam Cleaners**

Subject: Booklet contains general information on the steam cleaner and a simple schematic diagram to illustrate its operating principles. One of its principal features is a list of possible sources of coil scale build-up which enables steam cleaner users to circumvent these troubles. Other useful features are general information on the use of steam cleaners for most efficient operation and a list of Do's and Don't's to obtain greatest efficiency and economy and to maintain equipment in top operating condition. Finally, compound recommendations for various types of cleaning jobs are given.

Where to Get: DuBois Co., Cincinnati 3, Ohio. (Free)

Title: **Hose Couplings and Fittings**

Subject: Catalog pictures and gives details on each type of hose coupling and fitting, together with specifications, general and maximum pressure recommendations and a description of threads. The products include the following: common couplings, short and long shank; combination nipples, special suction hose couplings, including the quick action type, interlocking high pressure couplings; hydraulic hose couplings and hose adapter unions; Permalock couplings; fire hose couplings; pipe, inserted, built-on and scored nipples, flanges, hose clamps and hose menders.

Where to Get: B. F. Goodrich Co., Akron, Ohio. (Free)

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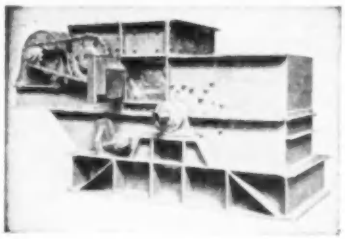

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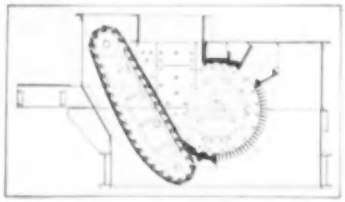

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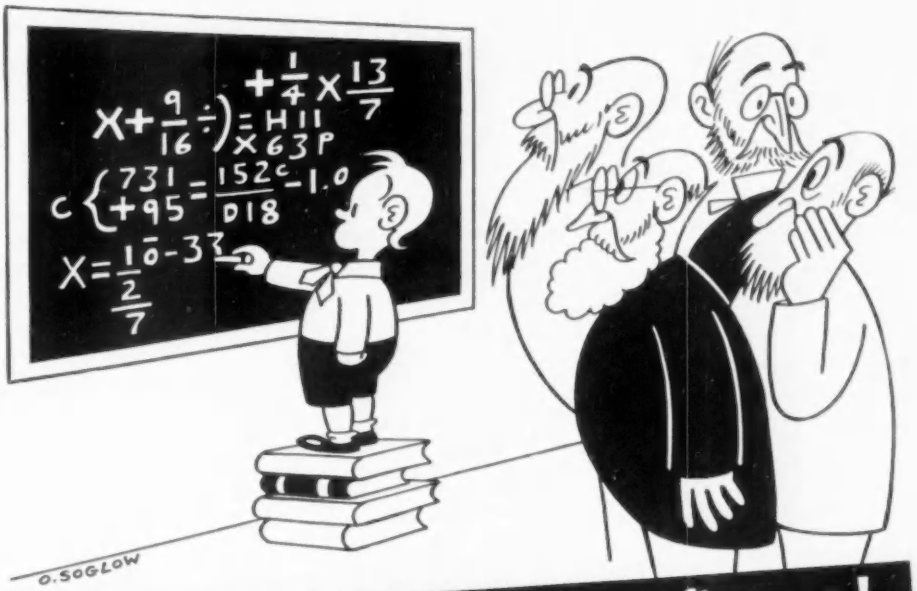

You'll be surprised at these figures!

- 80 million Americans own $48 billion of U. S. Savings Bonds.
- 20,000 of the nation's 38,000 firms employing 100 or more persons are operating Payroll Savings Plans.
- 7,500,000 workers are buying an individual average of $20 of Bonds per month.
- For the year 1948, sales of Series E Bonds exceeded redemptions by $495,148,000. The net figure for all Series after redemptions and maturities was $2,151,140,000.

What does all this mean to you? Well, it means first of all that your Treasury Department is successful in its program of increasing the nation's economic security by spreading the national debt. Secondly it means that most of the nation's business leaders recognize the value of the Payroll Savings Plan sufficiently to promote it within their companies.

For example . . .

To give you some idea of the Plan's growing popularity: 30,384 employees of a prominent electrical manufacturing company were investing in Bonds at the rate of $30,005,270 as of the end of 1948. This is a gain of nearly 100% over 1947, when 45,000 employees participated in that company. The treasurer of a well-known shoe company reported that, of his concern's 19,000 employees, 9,240 were in the Plan and had invested $146,307.32 in Bonds via deductions during the preceding month.

Why promote it?

We all know how buying Bonds builds an individual's future security. But there are *company* benefits too! Nation-wide experience shows that Payroll Savings increases each participating employee's peace of mind—makes him a more contented, more productive worker. It reduces absenteeism, lowers accident rates, increases output, and improves employee-employer relations.

It's easy to boost participation

1. See that a top management man sponsors the Plan.

2. Secure the help of the employee organizations in promoting it.

3. Adequately use posters and leaflets and run stories and editorials in company publications to inform employees of the Plan's benefits to them.

4. Make a person-to-person canvass, once a year, to sign up participants.

These first four steps should win you 40-60% participation. Normal employee turnover necessitates one more step:

5. Urge each new employee, at the time he is hired, to sign up.

Nation-wide experience indicates that 50% of your employees can be persuaded to join—without high-pressure selling. All the help you need is available from your State Director, U. S. Treasury Department, Savings Bond Division.

The Treasury Department acknowledges with appreciation the publication of this message by

Excavating Engineer

This is an official U. S. Treasury advertisement prepared under the auspices of the Treasury Department and The Advertising Council.

TO ADVERTISE: All advertising in this section is payable in advance. Rate: 60c per line, or $7.20 per inch of 12 lines. Minimum charge $2.40. No discounts; no commissions. Please count your copy carefully to avoid delay. Each line contains 41 characters (134 characters if all capital letters are used). Count spaces and punctuation as one character each. Allow 10 characters for box number, if blind advertisement is desired. Be sure to enclose the correct amount of money with your order. Closing date—15th of preceding month. Example: January closes December 15th.

TO INQUIRE: Be sure to address your inquiry to the advertiser by using the correct box number. Mail your letter in care of Excavating Engineer, South Milwaukee, Wisconsin. Write each advertiser a separate letter. Do not write us for name and address of advertiser. This information will not be given out. We have no information about the equipment advertised other than that shown in the advertisements themselves.

LARGE SHOVELS, CRANES AND DRAGLINES
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Bucyrus-Erie 120-B shovel, central location, 29'-6" boom, 20' handle, 4 yard manganese dipper. Also spare parts. Box 3409

SMALL SHOVELS, CRANES AND DRAGLINES
UP TO 2½ YDS.

Northwest model 25; 6; 80D; 95. Manitowoc 3500; 4500 new—will rent. Bucyrus 54-B; Monighan 5W; 7W; 9W; 450.

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MISCELLANEOUS EQUIPT.

Trench excavators: Buckeye 120, 160, 201, 205, 224; Parsons 250; Austin 160, B-40, Cleveland Shovels: B-E 120B, 40B, 44B, 50B, GA-3, 200B; Link-Belt K-45; Lima 1201, diesel, gas, elec. Draglines-cranes: P&H 1055LC, Marion 40-r, Lima 802, B-E 50B, Manitowoc 2000B. Walking draglines: 15-yd., 8-yd., 6-yd., 3-yd. Locomotives, 7-70 tons, diesel, gas, steam. Euclid 15-yd. bottom dumps; Allen wagons. Butler-Lippmann concrete batching plant. Hydro truck crane; 5-ton, on Int. truck. B-Erie shovel front att.; 2½ yd., 52H-55B.

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30-ton Tournacrane, 50' boom, with Super C Tourneapull diesel dr., 24.00x32 tires, 24-ply. Almost new. Especially suitable for heavy lifting and hauling on rough terrain and easily maneuverable. Sacrifice.

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Seven Super C Tourneapulls with Cummins engines, units completely overhauled and giant rubber on all of them. Box 3417

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Model 230 digging clamshell. Weight 4600#. Has teeth and jacket. Condition new. Only used on one job. Bargain price.

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Parts for Bucket Sizes
¾ Yd. to 2½ Yd.
LIPS — TEETH — CHAINS
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1226 West Adams Street
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New Dragline Buckets

1—1¼ cubic yard Red Arch Type AX medium duty buckets.

2½ cubic yard Type AX dragline bucket. (Reconditioned.)

3 cubic yard Red Arch, Type AY heavy duty bucket.

Bucyrus-Erie Company
Parts Division
South Milwaukee, Wisconsin

Bucyrus-Erie bit dresser No. 8, PKS No. 52-4 serial No. 49411. Capacity—4½" to 6¾", diameter 2" to 6" long. Speed of motor 1200 RPM. Motor 5/3 10HP, 220-440 volts, 3 phase. Motor pulley for V-belt 5" diameter. Overall length of base 14' 11¾"; overall width of base 1' 6¾"; overall height including foundation—3'. Net weight including motor, 2600 lbs.

Bucyrus-Erie bit furnace to go with above dresser. Bit furnace capable of heating 4" to 6" bits thru blower concrete. Use—7 gal. per hour motor. Furnace is complete less fire brick. Box 3415

New, Surplus Engines At Bargain Prices

1—Buda Lanova Model 4-DT-226 diesel engine, 4 cyl. 3⅝" x 5¾", rated 47 H.P. at 1800 R.P.M.

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2—Buda Model HP-268 gasoline engines, 6 cyl. 3½" x 4½", rated 54 H.P. at 1800 R.P.M.

1—International Harvester Model UD-14A diesel engine, 4 cyl. 4¾" x 6½", rated 76 H.P. at 1400 R.P.M.

2—International Harvester Model UD-18 diesel engines, 6 cyl. 4¾" x 6½", rated 125 H.P. at 1600 R.P.M.

1—International Harvester Model UD-18 diesel engine, 6 cyl. 4¾" x 6½", rated 100 H.P. at 1400 R.P.M.

4—Hercules Model JXB gasoline engines, 4 cyl. 3⅝" x 4¼", rated 45 H.P. at 1600 R.P.M.

Bucyrus-Erie Company
Parts Division
South Milwaukee, Wisconsin

Caterpillar mounted, inclined bridge with dump car for extending reach and lift of 5 yard quarry type shovel. Central location. Box 3411

Wanted To Buy

Portable crushing and screening gravel plant 25-50 T.P.H. Must be priced right and located within 500 miles of Pittsburgh, Pennsylvania. Write P. O. Box 8747, Pittsburgh 21, Penna.

POSITIONS WANTED

FIELD ENGINEER — INDUSTRIAL FRICTION MATERIAL

Nationally known manufacturer has exceptional opportunity open for Field Engineer with experience in the Industrial Brake Lining and Clutch Facing field. Must be willing to travel considerably. Application must state age, experience, marital status and salary expected. Box 3414

Position wanted as shovel operator. Can operate any make of machine; shovel; dragline; clamshell, or crane. Steam, gas, diesel or electric. Large or small machines. Virgil Dick, P. O. Box 203, Hurricane, W. Va. Phone 4403

Continued on page 64

THERE'S *Increased Footage* IN EASY OPERATION

THE Bucyrus-Erie 42-T blast hole drill not only punches down large diameter blast holes fast — it also makes a big hit with drillers because it's so easy to operate. You get better hole production because your operators can work at full speed for long periods without excessive fatigue. Check the convenience advantages listed below — see how they can help your drillers make better footage records each shift.

1. **CONTROL LEVERS:** Conveniently grouped within easy reach of operator. No unnecessary reaching or moving.

2. **POWER-DRIVEN TOOL WRENCH:** Located on operator's platform, with holding wrench hinged in lower derrick. Provides means of setting up and loosening tool joints quickly, with minimum effort.

3. **DERRICK CRANE:** With chain block of 1½ ton capacity, gives operator time-saving convenience in handling and changing heavy bits.

4. **CATERPILLAR-TYPE MOUNTING:** For quick and easy moves. Tractor-like steering control permits making sharp or gradual turns for outstanding maneuverability.

5. **HYDRAULIC LEVELING JACKS:** (Optional at slight additional cost). Save leveling time by eliminating elaborate ground preparations, blocking and cribbing. Control valves conveniently located for fast, easy operation.

6. **SHEET STEEL OPERATOR'S CAB:** (Optional at slight additional cost). Complete with coal stove, protects operator in severe weather. Has sliding panel window for better vision.

37850C

Add to these efficiency features the 42-T's hard-hitting drilling action and you'll see why many mine operators have achieved substantial reductions in preparation costs. Write for complete information.

BUCYRUS-ERIE COMPANY • SOUTH MILWAUKEE, WISCONSIN

4 days' work in 3 with JAEGER AIR

Jaeger Model 250 holds full pressure behind 2 heavy rock drills . . . averages 35% more daily footage than with any 210 ft. compressor.

Other Jaeger "new standard" ratings give you comparable increases in production as shown below.

Model 75 runs a heavy breaker or sheeting driver, 2 clay spades or 3 tampers at full pressure. No 60 ft. can do this.

Model 125 runs 2 heavy breakers at full pressure. No 105 ft. can do this.

Model 185 runs 3 heavy breakers or 2 medium rock drills at full pressure. No 160 ft. can do this.

Model 365 runs a heavy duty wagon drill, plus a rock drill or heavy breaker at full pressure. No 315 ft. can do this.

Model 600 runs 2 heavy duty wagon drills at full pressure, which no 500 ft. can do, and has air to spare for auxiliary drilling.

If 30% to 40% more production with the same men and tools sounds interesting, see your Jaeger distributor—or ask us for Catalog H-8.

See your Jaeger distributor or write

THE JAEGER MACHINE CO.

Columbus 16, Ohio Cable: BIGANLITLE

PUMPS • MIXERS • HOISTS • TOWERS
TRUCK MIXERS • PAVING MACHINERY

Chicago's Biggest

Continued from page 19

thousand yards out of the hole. Daily output of the two shovels ranges from 3,500 to 4,000 yards—up to 500 cu. yd. per hour. The firm worked a standard 8-hr. day and 40-hr. week.

The completed excavation will come to grade 56 feet below street level. The 44-B, lowest piece of equipment on the job, is operating at about 45 feet below street level. It loads to trucks on a bank 18 feet above. The next cut will bring the excavation down to the final grade.

Examining the big hole from a sidewalk superintendent's viewpoint clearly points up the types of material being excavated. From sidewalk level to datum line (lake level)—about 14 feet—there is a layer of fill. A 20-ft. thick section of sand appears next. At an elevation of minus 20 feet the hard-to-handle plastic clay which underlies much of Chicago begins. Bottom grade of the basement will be at minus 28, or 42 feet below street level. Elevator pits will go to minus 42 feet—56 feet below the sidewalk.

Open Air Maintenance

Speedway has established an open air maintenance shop at the southeast corner of the site. Here the fleet of trucks is serviced with Sinclair and Socony lubricants. Tire changes and minor repairs are made on the spot. Trailer-mounted Alemite greasing units and a tank truck full of Sinclair gasoline are kept in the "garage" along with a Lincoln arc welder. Thus, trucks are serviced while on the job with a minimum loss of time.

Other Equipment

Besides the two shovels, Speedway has a Bucyrus-Erie 22-B Transit Crane for moving and stockpiling the company's supplies and a Bucyrus-Erie 38-B dragline which will be put to work in later stages of the excavation. Three bulldozers—a Caterpillar D4 and two D7's—are kept busy leveling the dumping area.

The dump is located on the Outer Drive at Belmont Harbor where Speedway is building up the lakefront breakwater. It's a haul distance of about five miles taking trucks about one hour for the round trip.

In the middle of the pit and sticking out about a half block from the east bank are the heavy pilings of an old ship pier. These reminders of old Chicago history were uncovered during the excavation.

Uncover Old Pier, Boat

Much of the lake front land which supports today's skyscrapers is composed of fill. The resurrected pier—called the old Streeterville pier—once jutted out into the harbor to welcome the early Great Lakes sailing ships. Need for more downtown land to ease the city's growing pains long ago prompted officials to fill in over the old dock and far beyond it.

In the slip beside the pier, Speedway also uncovered an old lumber barge that used to ply the Chicago river. The boat measured about 60 feet in length. Its hawser chain will be given to a Chicago museum.

Install Wellpoint System

The problem of keeping the excavation free of ground water is handled by the contractors, O'Neil and Kenny. The entire perimeter of the excavation is enclosed by a wellpoint system installed at the datum line. The equipment was leased from the John W. Stang Corp., Omaha, Neb., and installed by the building contractor.

The wellpoints are in 16 and 18-ft. lengths, two inches in width. They are spaced four feet apart and lead into an 8-in. suction line. Three Hercules-powered 2-stage centrifugal 8-in. suction line pumps pump 300 gpm and when the wellpoints are re-set will

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Bolted sectional steel hulls for landlocked, inland waters

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DESIGNERS AND BUILDERS OF DREDGING EQUIPMENT SINCE 1905

pump 500 gpm. Red Crown gasoline is gravity fed to pump motors from drums located at street level. Water sucked out of the excavation is discharged into the city's sewers.

Hydraulic Crane Sets Points

A Bucyrus-Erie H-3 Hydrocrane owned by the O'Neil Construction Company was used to spot the wellpoints and hold them in place while they were jetted into the ground with high pressure water from nearby fire hydrants. The Hydrocrane is kept at the job site for a number of odd jobs that require exceptional mobility. It will next be used for setting sheeting drums.

Ground water is an ever-present problem on this job. The 56-ft. deep basement lies within two blocks of Lake Michigan. Although the wellpoint system has proved satisfactory to date, it is expected that the next 10-ft. cut will necessitate extra precautions. A sump will probably be dug and the seepage pumped out of it to assure dry working conditions.

While the excavating goes ahead, the general contractor is engaged in the next operation which consists of driving 30,000 feet of steel sheeting. The MZ238 and M116 interlocking sheet steel piles range up to 45 feet in length. They are being driven around all deep excavation to help hold out the ground water during construction.

Cranes Handle Hammers

At this time, three Bucyrus-Erie 38-B cranes were handling pile drivers and positioning the interlocking piles.

"That's what you get for being an early bird."

Two more 38-B's were to be brought on the job from the O'Neil Construction Company's quarters in Syracuse.

Two McKiernan-Terry 9B3 hammers are driving the approximate 600 lineal feet of steel piling. Two steam generating plants supply the hammers. One is a new Cleaver-Brooks 80-hp horizontal boiler and the other a 60-hp vertical. They are powered by diesel fuel gravity fed from an elevated tank.

One of the 38-B cranes working in the excavation handles a large wooden template constructed of 16 x 16's. The wood frame, which resembles the framework for a billboard, is set against the steel piles as they are driven to assure that they enter the ground straight and plumb.

The contract for driving the concrete, wood and composite foundation piles upon which the hospital will rest has been awarded to Western Foundation Co. There will be 2,700 of these piles driven to a depth of about 94 feet below sidewalk level.

Drive Test Pile

A 12-in. poured pile was being tested at the edge of the building site. The sample 50-ton pile was driven to a depth of 94 feet under supervision of the Veterans Administration personnel.

A 110-ton box of clay rested on the pile. Hydraulic jacks under the load kept the weight on the pile at a constant 100 tons. Gauges measured sinking of the test pile— up to June 15 at a rate of .001 inches per hour. It was expected the movement would stop in a few days.

The block on which the new research hospital is rising was formerly occupied by a parking lot and a filling station. O'Neil and Kenny converted the old station into a tool shop. Atop it, they built penthouse offices for their engineering and supervisory staff. Here, you'll find the general superintendent for the combined contractors, A. J. Carlson. Construction engineer for the government (Veterans Administration) is Col. T. F. Montgomery.

Project Personnel

In addition to Mr. Kolko, Speedway personnel on the job included H. F. Bussey, chief engineer and vice president, Harry DeYoung, superintendent, and Marshall J. Kolko, assistant superintendent.

With the ground work out of the way in a fast 60 days, it won't be long before the Veterans Administration Research Hospital starts rising to take its place in the Chicago skyline.

ERIE BUCKET CATALOG *Shows*

Gross Loads for 43 Standard 2-Line Buckets in 9 Materials

Write for a copy of Catalog 2L-2. Compare your present bucket performance to see if you are getting the most from your crane. Or send us size and make of crane and materials handled, giving present bucket output. We'll give you Erie's proved bucket performance for your crane.

Erie makes 4 standard types of 2-line buckets in 43 sizes.

ERIE
STEEL CONSTRUCTION COMPANY
408 GEIST ROAD • ERIE, PENNSYLVANIA

For Sale

Continued from page 60

Gen. supt. or supt. available. Experience covers 25 years supervising, estimating and building, all classes of excavating; railroads; highways; airports; earth-fill dams; large sewers. Honest, sober, reliable. Best of references. Salary open. Box 3356

Man with the following qualifications desires a position in open pit mining or excavating, also will accept position in selling excavating or mining equipment. Age 29, college degree in engineering, reliable, ambitious, and has the ability to get along with others. Has been connected directly or indirectly with strip mining for the past fifteen years. Has been in complete charge of a strip coal and clay mine for the past five years. Familiar with the operation and maintenance of most excavating equipment and miscellaneous mining equipment as well as the business and selling part of mining. Box 3410

Dredge or excavation superintendent, Member A. I. M. E. 20 years old, married, no children. Large experience dredging and excavation. Fluent Spanish. Available after August 1. Box 3407

Position wanted as shovel operator on dipper front shovel. Can operate Lima, Lorain, Speeder, etc. Write to Al Zayatz, 29 East Main Street, Shaft, Pa.

If you are Buying or Selling Used Equipment this is the place to let the Excavating Industry know about it.

New Bridges

Continued from page 31

The new overpass will have a 30-ft. deck, curb to curb. It will be 334 feet long consisting of two abutments, two open piers next to each abutment, two closed or solid piers, and a center set of tapered pier legs supporting the reinforced concrete deck on either side of the railroad tracks. The deck will be carried on 33 and 36-in. WF beams except in the center pier where the cross girder will be built up of 4-in. angles, back to back. The overpass is a normal structure skewing over the Santa Fe tracks at an angle.

Piledriving and concrete pouring were generally similar to methods previously detailed for the Rio Puerco Bridge, with the exception that piledriving was not a big job here. Small concrete crews were actually a safety measure at the Santa Fe Overpass, because 20 to 25 fast trains passed at high speed within 20 feet of the work during the day shift. Ryan did not want men on this job who had time enough to stand around and get hurt.

A careful work schedule was necessary in the case of the overpass. Since abutments had to be built on top of solid approach fills, a great deal of earthwork was necessary to time in with completion of the center piers. Concrete work therefore started in the center and worked outward toward the abutments, while excavating got into high gear.

Haul Across Busy Tracks

Several unfavorable features complicated the earthwork. The borrow pit was situated across the Santa Fe tracks from the fill, so haul trucks had to cross under the watchful eye of a flagman. Frequent delays were encountered, particularly when long freight trains rumbled by.

Also, part of the earthmoving contract consisted of removing the approach fills from the old overpass. The old overpass had to stay in service, however, until the new one was finished. This interfered somewhat with what might have been a more ideal setup, for the earth for the new approach fills had to be borrowed and the other excavation delayed until both bridges were ready for traffic.

Borrow excavation was done about ¼ mile from the overpass fill, against the side of a mountain. In bygone ages, the natural geological decomposition of the mountainsides had washed down to the base, leaving a pocket of sandy clay material about 30 feet deep.

A Bucyrus-Erie 22-B shovel with a ¾-yd. Bucyrus-Erie dipper worked against an average 15-ft. bank to load 125 cu. yd. per hour to six to ten Ford and Chevrolet 4½-cu. yd. dump trucks.

In order to get a dense fill, it was necessary to have water, and water was about as scarce in that locality as it is anywhere. The nearest water for use in the fill was the city supply in Gallup, 18 miles away. There was no choice but to haul it.

A large International-powered semi-trailer tank truck, capable of hauling 4,500 gallons at a trip, brought water out to the job dumping to a small clay-lined pond which one of the machines had scooped out. Strangely, little of the precious fluid leaked out. Many times the pond stayed full overnight, losing less than two inches from seepage.

Compact In Eight Passes

Three small sprinkler trucks dispensed water to fills. They were mostly Fords, loaded from the pond by a 4-in. Sterling pump. Fill material dumped by the trucks was spread by two LeTourneau bulldozers, one mounted on a Caterpillar D7 tractor, and the other on a D4. After the water was applied, the 6-in. lifts were rolled eight times by three sets of LeTourneau sheepsfoot rollers drawn by Caterpillar D7's. Two sets were 2-drum; the other a 3-drum unit.

Short haul excavation was also done by an 8-yd. LeTourneau Carryall scraper handled by a D7 tractor. Use for this machine was limited, however — for the most part the excavating was by shovel and trucks.

Earth fill for the mile-long stretch of highway between the two structures will come partly from the old overpass fills, the balance from the borrow pit. The same compaction treatment will be required.

Fortunately, flexible base cushion material is located in a pit less than a mile away. It will be loaded by the 22-B and 38-B shovels and trucked to the roadway. Use of a small scalping screen is planned for preparation of granular top course material. The top course is variable, ranging from 6 to 12 inches. Granular blanket will be laid in 4-in. lifts, watered, and compacted by Bros rubber-tired pneumatic rollers.

Plans call for the flexible base to be sealed with MC-3 asphalt mixed with the top one inch of base course over a 32-ft. width. A 2½-in. bituminous cake will then be roadmixed with a Wood machine, and laid down 24 feet wide. After it is rolled and sealed with RC-4 asphalt and chips, the new highway will be ready for traffic.

The New Mexico Highway Department operates under the supervision of B. G. Dwyre, chief engineer. George Young is Ryan's general superintendent.

Model HM — 1½ cu. yd., 4-wheel drive, 76 HP, Gas or Diesel

Model HL — 1¼ cu. yd., 55 HP, Gas or Diesel

Model HF — ¾ cu. yd., 53 HP

Model HE — ½ cu. yd., 34.5 HP

Model HA — 12 cu. ft., 29 HP

There is Only One PAYLOADER

"PAYLOADER" is the exclusive name applying to Hough-built tractor-shovels, and "PAYLOADERS" are exclusive because they are complete tractors and shovels — not attachments for tractors.

Tractor and shovel are a unit design with speed, stability, operator comfort and visibility, and ease of operation "built-in" to provide the maximum in tractor-shovel performance, versatility and usefulness.

There are Five PAYLOADERS

"PAYLOADERS" comprise a complete graduated line of sizes — five models from 12 cu. ft. to 1½ cu. yd. bucket capacity. You can choose the one that will just fit your requirements. They all incorporate many superior "PAYLOADER" tractor-shovel features — several speeds in each direction; automatic, powerful bucket crowd and bucket tip-back; full hydraulic bucket control; hydraulic brakes; quick, easy reverse shifting.

There are Thousands of PAYLOADERS

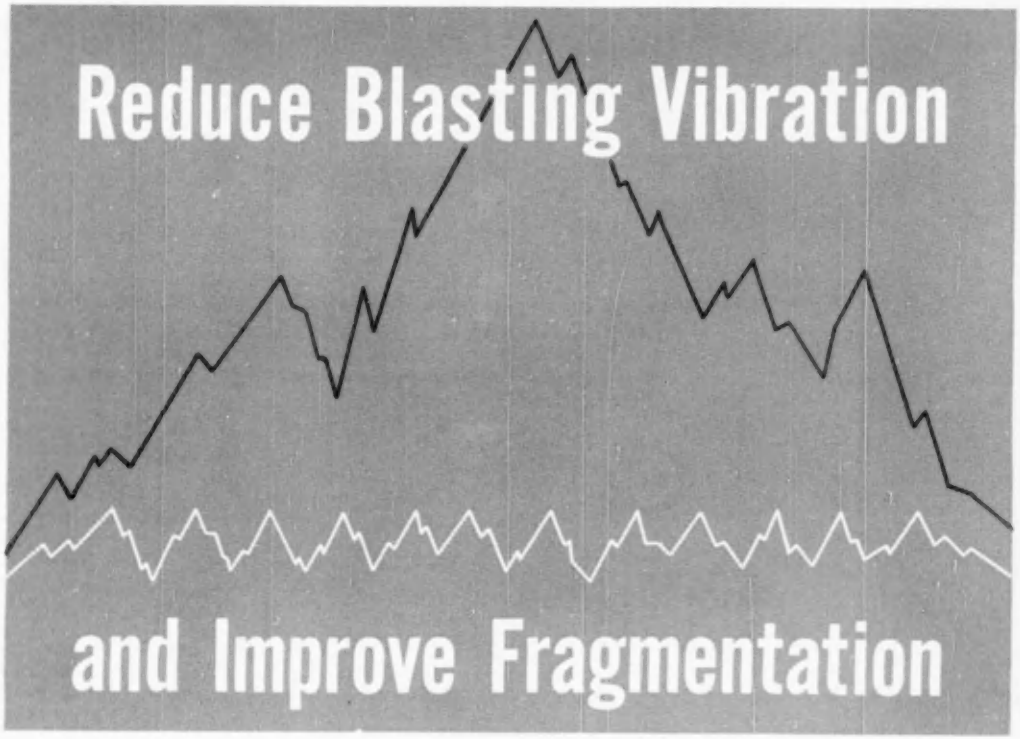
The thousands of "PAYLOADERS" in use are the real proof of the superiority of these unit-built tractor-shovels. They are being used to dig, load trucks, excavate, level, grade, carry, bulldoze, backfill, strip, push, lift and handle materials.

Unsurpassed in versatility, fast *to* the job under their own power and fastest *on* the job — those are the facts about "PAYLOADERS" that have made them the choice of men who know tractor-shovels. Your Hough Distributor is ready to tell you what "PAYLOADERS" can do for you. See him today or write The Frank G. Hough Co., 708 Sunnyside Avenue, Libertyville, Illinois.

SAY "HUFF"

PAYLOADER®

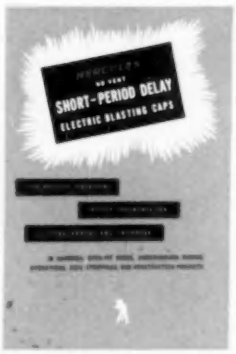
Manufactured by THE FRANK G. HOUGH CO.



In many blasting operations you get more work out of your explosives when you use Hercules "No-Vent" Short-Period Delay Electric Blasting Caps. You reduce earth vibrations, noise, backbreak, and endbreak; and at the same time get better fragmentation. You break more material, and break it in better shape for digging, hauling and crushing. This saves you money at every step in your operation.

A complete series of Short-Period Delays gives twelve closely-timed delay intervals in approximately 400 milliseconds. By various arrangements of these delays, the delay effect is secured in blasts of practically any number of holes.

For details and guidance in using "No-Vent" Short-Period Delays in quarries, open-pit mines, underground mines, coal stripping, and construction, return coupon.



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